

## PATENT ABSTRACTS OF JAPAN

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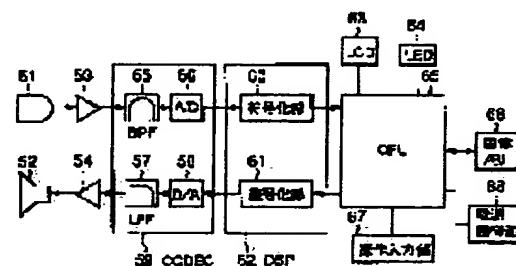
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## (54) VOICE DATA PROCESSOR

## (57)Abstract:

**PURPOSE:** To prevent an operator from erasing the recorded data due to erroneous operation.

**CONSTITUTION:** This processor is provided with a CPU 65 recording a voice signal converted to the digital data in a rewritable solid memory 66, a partial erase SW erasing the voice data recorded in the solid memory 66, a reproducing SW and the partial erase SW for setting the erase range of the voice data recorded in the solid memory 66, the CPU 65 delaying erase execution for several seconds after the erase range is set, an LCD 63 and an LED 64 displaying prescribed information related to the erase execution for the several seconds, a reset SW for canceling the erase execution and the CPU 65 executing no erase when the reset SW is operated while displaying and executing the erase of the voice data by the partial erase SW when no reset SW is operated while displaying.



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**CLAIMS**

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**[Claim(s)]**

[Claim 1] A voice data record means to record on the solid-state memory which can rewrite the sound signal changed into the digital data, An elimination means to eliminate the voice data recorded on solid-state memory, and the 1st actuation means for setting up the elimination range of the voice data recorded on solid-state memory, A delay means to delay predetermined time elimination activation after a setup of the elimination range, and the above-mentioned predetermined time and a display means to display the predetermined information about elimination activation, Elimination is not performed when the 2nd actuation means is operated during the above-mentioned display with the 2nd actuation means for canceling elimination activation. The voice data processor characterized by providing the control means which performs elimination of voice data with an elimination means when the 2nd actuation means is not operated during the above-mentioned display.

[Claim 2] For the display by which the elimination range of the voice data recorded on solid-state memory is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means, a display means is a voice data processor according to claim 1 characterized by performing a different display.

[Claim 3] It is the voice data processor according to claim 1 or 2 characterized by performing the display about elimination activation with the combination of luminescence and an alphabetic character.

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[Translation done.]

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to a voice data processor.

[0002]

[Description of the Prior Art] Now, the equipment which carries out record playback of the sound signal at a magnetic tape is widely used as one of the voice data processors. In such equipment, in order to eliminate the contents recorded once, it becomes possible by performing only elimination, without recording or recording a non-signal. In any case, mechanical actuation is required, and a setup of the exact elimination range is difficult. Moreover, it must run actually eliminating a tape and excessive time amount is required. Moreover, since the eliminated part remains as a blank part, an unnatural impression is received when the tape which eliminated some recorded contents is played. Sound recording was usually redone for these faults.

[0003] Moreover, in the so-called dictate transcription system, the activity which a predetermined operator text-izes an unspecified sound recording person's recorded tape, and returns a sound recording person a tape again is done. Since the same tape as the original sound recording person is not necessarily returned at this time, the activity which eliminates a tape once is needed. For this reason, it had the high-speed elimination function which rewinds while eliminating to these equipments.

[0004] Then, a sound signal is changed into a magnetic tape which was described above at digital data as equipment which replaces the equipment which carries out record playback, and the so-called digital recorder which carries out record playback is put in practical use by rewritable solid-state memory. JP,63-259700,A is indicating such a digital recorder.

[0005] Since the contents recorded in the digital recorder are recorded as digital data, they can eliminate and connect the part of arbitration. Moreover, since record data are eliminable in an instant, the elimination function which was not former not much useful attracts attention as an important function.

[0006]

[Problem(s) to be Solved by the Invention] However, in the above-mentioned digital recorder, since data [ finishing / record ] will be eliminated within an instant if elimination actuation is performed, the so-called operation mistake becomes a problem. That is, although a great portion of contents can be revitalized by canceling this immediately with the equipment recorded on a magnetic tape even if it carries out elimination actuation accidentally, in the case of a digital recorder, the contents will be eliminated [ no ] within an instant and this can be revitalized.

[0007] Then, although it was possible to add the function to require confirmation operation of an operator again when eliminating recorded data as used by the computer system etc., it was difficult to realize such a function by the display and control unit to which a small system like a voice data processor was restricted.

[0008] The voice data processor of this invention is made paying attention to such a technical problem, and the place made into the purpose is to offer the voice data processor which can prevent that an operator eliminates recorded data by the operation mistake.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the voice data

processor concerning the 1st invention A voice data record means to record on the solid-state memory which can rewrite the sound signal changed into the digital data, An elimination means to eliminate the voice data recorded on solid-state memory, and the 1st actuation means for setting up the elimination range of the voice data recorded on solid-state memory, A delay means to delay predetermined time elimination activation after a setup of the elimination range, and the above-mentioned predetermined time and a display means to display the predetermined information about elimination activation, When the 2nd actuation means is operated during the above-mentioned display with the 2nd actuation means for canceling elimination activation, elimination is not performed, but when the 2nd actuation means is not operated during the above-mentioned display, the control means which performs elimination of voice data with an elimination means is provided.

[0010] Moreover, the voice data processor concerning the 2nd invention performs the display in which a display means differs from the display by which the elimination range of the voice data recorded on solid-state memory is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means in the voice data processor concerning the 1st invention.

[0011] Moreover, the voice data processor concerning the 3rd invention performs the display about elimination activation with the combination of luminescence and an alphabetic character in the voice data processor concerning the 1st or 2nd invention.

[0012]

[Function] That is, in the voice data processor concerning the 1st invention, it records on the solid-state memory which can rewrite the sound signal changed into the digital data with a voice data record means. Next, the elimination range of the voice data recorded on solid-state memory is set up with the 1st actuation means, and predetermined time elimination activation is delayed with a delay means after a setup of the elimination range. At this time, a display means displays the above-mentioned predetermined time and the predetermined information about elimination activation. And when the 2nd actuation means for canceling elimination activation during the above-mentioned display is operated, elimination is not performed, but when the 2nd actuation means is not operated during the above-mentioned display, elimination of the voice data based on an elimination means is performed.

[0013] Moreover, the voice data processor concerning the 2nd invention is made to perform a display which is different from the display by which it is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means in the elimination range of the voice data recorded on solid-state memory in the voice data processor concerning the 1st invention.

[0014] Moreover, the voice data processor concerning the 3rd invention is made to perform the display about elimination activation with the combination of luminescence and an alphabetic character in the voice data processor concerning the 1st or 2nd invention.

[0015]

[Example] Hereafter, one example of this invention is explained to a detail with reference to a drawing. Drawing 1 is drawing showing the configuration of the solid-state memory recorded message sender for telephone (digital recorder) with which this invention is applied. In this drawing, the built-in microphone 51 is connected to CPU65 through the input amplifier 53, BPF (band pass filter)55, A/D converter (A/D) 56, and the coding section 60 in order. Moreover, the built-in loudspeaker 52 is connected to CPU65 through the output amplifier 54, LPF (low pass filter)57, D/A converter (D/A) 58, and the decryption section 61 in order. Here, BPF55, A/D converter 56, LPF57, and D/A converter 58 constitute CODEC (coder decoder)59, and the coding section 60 and the decryption section 61 constitute DSP (digital signal processor)62.

[0016] LCD (liquid crystal display section)63, red (only referred to as LED below) LED 64 and solid-state memory 66, the actuation input section 67, and the power control section 68 are further connected to CPU65.

[0017] In the above-mentioned configuration, at the time of audio record, the sound signal inputted from the built-in microphone 51 is amplified with the input amplifier 53, and is inputted into CODEC59. In CODEC59, after letting BPF55 pass, A/D conversion is carried out by A/D converter 56. Here, the passage frequency band of BPF55 is 300Hz ~ 3.4kHz, the sampling frequency at the time of A/D conversion is 8kHz, and the number of quantization is 8 bits. The digital data by which A/D conversion was carried out is sent to DSP62, and compression processing is carried out per one frame in the coding section 60. In this example, data of one frame are compressed into 12 bytes of data 24msec periods at

the time of 24 bytes and the nature mode of bass at the time of the nature mode of loud sound. The compressed voice data is sent to CPU65 per frame, and is memorized by solid-state memory 66 with various kinds of additional information. 16M bit data are recordable on solid-state memory 66.

[0018] At the time of audio playback, voice data [ finishing / sound recording ] is sent to CPU65 per one frame, and is further sent to DSP62 at solid-state memory 66. The voice data sent to DSP62 is decrypted in the decryption section 61, is changed into 8 kHz bit data, and is sent to CODEC59. In CODEC59, the received digital data is changed into a sound signal by the D/A transducer 58, and it outputs through LPF57. The sound signal outputted from CODEC59 is amplified with the output amplifier 54, and a voice output is carried out from the built-in loudspeaker 52.

[0019] CPU65 is a 8-bit 1 chip microcomputer with a ROM capacity [ of 16 K bytes ], and a RAM capacity of 1 K byte, and performs mode setting of sound recording and playback according to the actuation input from the actuation input section 67. Moreover, file management of the voice data recorded on solid-state memory 66 is carried out per letter, and the memory writing and read-out at the time of sound recording and playback are controlled. Furthermore, CPU65 eliminates voice data [ finishing / record to solid-state memory 66 ] according to the actuation input from the actuation input section 67. Moreover, CPU65 displays the mode in which various kinds of modes of a recorded message sender for telephone are performed and performed according to the actuation input from the actuation input section 67 on LCD63 and LED64.

[0020] Furthermore, CPU65 controls the power control section 68 according to the input of the power source SW in the actuation input section 67. And when a power source SW is set as OFF, the current supply to the I/O amplifier 53 and 54, CODEC59 and DSP62, and solid-state memory 66 is suspended, and it switches to low consumed-electric-current mode, and only the clock function in CPU65 is operated, and a clock display is performed by LCD63.

[0021] Drawing 2 is the external view of the solid-state memory recorded message sender for telephone shown in drawing 1 , and the actuation SW of the various kinds which constitute the actuation input section 67 shown in drawing 1 , and LCD63 and the LED64 grade which constitutes a display are prepared. The actuation input section 67 consists of 11 push SW and three slides SW, and performs mode setting of a sound recording playback machine, and various kinds of actuation.

[0022] Drawing 3 is the segment Fig. of the liquid crystal display by LCD63, and performs a mode display and various kinds of information displays of a recorded message sender for telephone. Drawing 4 and drawing 5 are drawings showing each example of a display. Drawing 4 (a) is the display at the time of a power source OFF, and drawing 4 (b) is the display at the time of the power source ON of a replace mode. Drawing 4 (c) is the display at the time of the power source ON in insertion sound recording mode, and drawing 4 R> 4 (d) is the display under playback. Drawing 4 (e) is already heard, and is the display under playback, and drawing 4 (f) is the display under sound recording. Drawing 4 (g) is the display under rapid traverse (FF), and drawing 4 (h) is the display under rewinding (REW). Drawing 4 (i) is the display under E mark (en doping letter) record. Drawing 4 (j) is the display under I mark (instruction mark) record. Drawing 5 (a) is the display under a partial elimination setup and partial elimination and letter elimination hold. Drawing 5 (b) is the display under whole elimination hold, and drawing 5 (c) is the display at the time of setting up incorrect elimination prevention protection, and the time of a protection alarm. Drawing 5 (d) is the sound recording time display when reproducing a letter head, and drawing 5 (e) is the power-resource display of a power up (at the time of standby discharge). Drawing 5 R> 5 (f) is a working dc-battery alarm display, and drawing 5 (g) is the display at the time of the lock of operation by the fall of battery voltage. Drawing 5 (h) is a display when playback and FF make a memory end, and drawing 5 (i) is a display when the memory remaining capacity is lost during sound recording.

[0023] Moreover, in drawing 3 , 32 is the segment which shows a cell residue, and when a cell residue carries out power-source ON of a certain time more than predetermined level, the light is switched on for several seconds ( drawing 5 (e) ). When cell level becomes below predetermined, only the outside segment is indicated by flashing ( drawing 5 (f) ). When a cell residue furthermore decreases, an outside segment is turned on for several seconds, the mode under activation is stopped, and it shifts to a power-source OFF condition, and it is made a clock display ( drawing 5 (g) ).

[0024] 33 is a segment which displays the mode of operation and various kinds of established states of a recorder. 34 is a segment which shows a current letter number. In this example, file management of the recorded voice data is carried out per letter, and it can record a maximum of 19 letters (file). 35 is the

segment turned on when displaying the date and time of day which were recorded, and when the letter head section is reproduced, it indicates the date when finally carrying out sound recording termination of the letter, and the time of day by predetermined time ( drawing 5 (d) ). The date and time of day which were recorded are recorded on solid-state memory 66 with voice data. Although the time of day which carried out sound recording termination is displayed on the last in this example, this may be the time of day which carried out sound recording initiation at the last, and may be the time of day which ended [ which was ended and sound-recording-began ] the letter first. Or the time of day of the real time under sound recording may be recorded and displayed with sound recording data.

[0025] 36 is the segment which displays the date and the time amount from a letter head, displays a current date at the time of a power source OFF, and displays the sound recording time amount from a letter head per second at the time of a power source ON. 37 displays current time at the time of a power source OFF by the segment which displays the residual time in which time of day and sound recording are possible, and displays the residual time which can be recorded per part at the time of a power source ON.

[0026] Furthermore, in drawing 2 , the light is switched on during sound recording elimination, and LED64 displays a mode of operation. Moreover, at the time of various kinds of alarm pronunciation mentioned later, an alarm sound is interlocked with and it blinks. Moreover, when voice input level is low and it changes into a sound recording standby condition during the sound recording by voice starting mode, it indicates by flashing. Moreover, 15 is a stereo jack by the foot [ an earphone jack-cum- ] remote control SW input jack, and, in the piece channel, another [ an earphone output terminal and ] channel has become a foot SW remote control input terminal. 16 is a stereo jack by the hand [ a microphone jack-cum- ] remote control SW input jack, and, in the piece channel, the microphone input terminal and another channel have become a hand remote control input terminal. Furthermore, volume 14 is sound-volume volume and adjusts the volume control under playback, and the starting level under voice starting mode sound recording.

[0027] The display of the function of each actuation SW shown below at drawing 2 and LCD63 when each actuation SW is operated is explained. Slide SW11 is the power source SW which served as Hold SW, carries out a liquid crystal display to a recorder display at the time of a power source ON, and receives the input of each actuation SW ( drawing 4 (b) ). At the time of a power source OFF, a liquid crystal display is switched to a clock display ( drawing 4 (a) ), and the input of Actuation SW is not received. Moreover, slide SW11 serves as a hold facility. That is, when slide SW11 is turned ON during activation in sound recording, playback, a rapid traverse, and rewinding mode (i.e., when it is made a power source OFF), it continues the mode concerned and the input of Actuation SW is forbidden. Moreover, when it is made Hold ON during sound recording playback, a rapid traverse, and rewinding, the input of Actuation SW is not received until sound recording playback, a rapid traverse, and rewinding stop at a memory end. Moreover, when it stops at a memory end, it shifts to the condition of a power source OFF immediately. An actuation input is carried out once it makes it Hold OFF, in order to stop the mode after making it Hold ON. This is effective in the operation mistake prevention under mode activation.

[0028] In this example which changes the bit rate which changes a sound signal into digital data by the tone-quality mode switch SW, and switches sound recording time amount, the sound recording of 1 hour is possible for slide SW12 in the nature mode of bass in the nature mode of loud sound for 30 minutes.

[0029] It is SW which already heard that slide SW13 was a switch in voice starting mode, and made the switch in the mode serve a double purpose, and when it turns ON, during sound recording, a voice starting function is used, and only when voice input is more than predetermined level, it records. 1.5X high-speed playback is performed during playback.

[0030] If this SW18 is pushed during sound recording or a halt by the E mark (and - OBU letter) SW, SW18 will display E mark during several seconds on LCD63 ( drawing 4 (i) ), and will update a letter. For example, when the E mark SW was pushed during sound recording or after sound recording termination and sound recording initiation of letter No.18 is carried out next, sound recording initiation of letter No.19 is carried out. When there are already the 19 numbers of letters, alarm pronunciation is carried out, E mark display (132) and the display (133) of a letter number are blinked for several seconds, and renewal of a letter is forbidden.

[0031] SW19 will perform I mark during several seconds to LCD63, if this SW19 is pushed during sound recording or a halt by the I mark (instruction mark) SW ( drawing 4 (j) ), and it adds and records I mark on

sound recording data. It becomes possible by recording I mark to carry out retrieval playback later. When I mark can be recorded to 99 pieces by all the whole letters and the 100th piece is recorded, only predetermined time indicates alarm pronunciation and the I mark display by flashing.

[0032] SW23 is the sound recording mode switch SW, and switches sound recording mode between a replace mode and insertion sound recording mode. Usually, when it is a replace mode and records in a replace mode from the letter middle, data [ finishing / sound recording / already ] are eliminated like a tape recorder, and new sound recording data are recorded. However, when it records to letter termination, it adds to letter termination, and records and the following letter does not eliminate. If SW23 is pushed, it will become insertion sound recording mode and will always display ( drawing 4 (c) ). When insertion sound recording is carried out from the letter middle, sound recording data are inserted and recorded on the current position, and data [ finishing / sound recording ] are not eliminated. SW23 is toggle actuation and switches a replace mode and an insert mode. However, a power up is reset by the replace mode. Although the residual time in insertion sound recording mode which can be recorded is only a non-recorded capacity of memory, the residual time in a replace mode which can be recorded is decided from a non-recorded capacity of memory, and a recorded capacity from the current position to letter termination. For example, when carrying out overwrite sound recording in the nature mode of bass from the letter head recorded in the nature mode of loud sound for 10 minutes, the residual time which can be recorded is added for 20 minutes.

[0033] SW24 is for eliminating the part of the arbitration of recorded data by the partial elimination SW. If an operator moves the current position to the head or termination of a part to eliminate among playback and FF-REW first using one of the actuation SW and SW24 is pushed, he will blink the "ERASE" display ( drawing 5 (a) ) and LED64 of LCD63, and will memorize an elimination starting position. Next, an operator moves till a place to eliminate among playback and FF-REW using one of the actuation SW. Flashing of the "ERASE" display of LCD63 and flashing of LED64 are continued between this migration. After migration, if an operator pushes SW24 again, the "ERASE" display and LED64 of LCD63 will be shortly turned on for several seconds, and the recorded data of the part set up after several seconds are eliminated. The range to set up may be the back from before sound recording time amount, and may be a front from after. Moreover, two or more letters may be straddled. When the letter which the incorrect elimination prevention protection later mentioned to set-up elimination within the limits has required exists, alarm pronunciation is carried out, a protection display ( drawing 5 (c) ) and LED64 are blinked for several seconds to this pronunciation and coincidence, and only the part which protection has not required is eliminated.

[0034] That is, if the elimination range is set up and SW24 is pushed on the 2nd times, the "ERASE" display and LED64 of LCD63 will be turned on for several seconds, but if the reset SW26 which suspends elimination and is mentioned later in the meantime is pushed or a power source SW11 is turned OFF, elimination will be taken and erased in the meantime. This is effective in the incorrect elimination prevention by the operation mistake. Moreover, the actuation input of those other than reset SW26 and power-source SW11 is not received during an elimination hold. Although a partial elimination starting position and a termination location are taken by reset SW26, it erases in this example and partial washout mode is reset, only an elimination termination location may be eliminated by reset SW26, and you may return to the display under partial elimination setup. If under [ 24 ] a partial elimination setup (i.e., SW) is pushed once, an elimination starting position is set up and reset SW26 is pushed during migration among playback and FF-REW using one of the actuation SW, a setup will be taken and erased and partial washout mode will be canceled. A setup is taken and erased, when the power source was turned OFF during the setup, or when sound recording is performed (when it is made Hold ON).

[0035] Moreover, when the set-up elimination range straddles two or more letters, in this example, elimination processing is carried out for every letter, and E mark which is the break of a letter does not eliminate. When the one whole letter is eliminated, it eliminates per letter, and the letter number of subsequent letters is packed. Although elimination processing is carried out for every letter, when straddling two or more letters, E mark in the range is eliminated and you may make it tie a letter to one in this example.

[0036] SW25 is the whole letter elimination SW, once it pushes, will perform an elimination display ( drawing 5 (a) ), i.e., the "ERASE" display of LCD63, and will turn on LED64. If SW25 is canceled at this time, after switching on the light for several seconds, the letter of the current position is eliminated per



letter. if SW25 is pushed first and it continues pushing for several seconds after an elimination display ( drawing 5 (a) ) and lighting of LED64 -- the whole letter elimination display ( drawing 5 R> 5 (b) ) -- becoming -- further -- the whole memory is eliminated after several seconds. When reset SW26 or a power source SW (SW11) is turned off during the elimination hold for several seconds, elimination is canceled or the actuation input of those other than Reset SW (SW26) and a power source SW (SW11) is not received during an elimination hold. When the incorrect elimination prevention protection later mentioned on the set-up letter has started, alarm pronunciation is carried out and it does not eliminate. When a whole elimination setup is carried out and there is a letter which has required protection, the letter number after the eliminated letter which eliminates only the letter which carries out alarm pronunciation and has not required protection is packed.

[0037] Although it displays [ elimination ] and ( drawing 5 (a) ) displays [ LED ], and it is made to perform elimination after carrying out an elimination hold, and erasing a display after several seconds since it has set to this example and the completion of elimination also of the elimination of a gap is carried out within 1 second When elimination executive operation time amount becomes long by the case where the elimination range is large, the case where there are many letters, etc., the display may be indicated by flashing a different period during elimination processing activation.

[0038] SW26 will take and erase elimination, if this SW is pushed during an elimination hold of partial elimination (SW24) and the whole letter elimination (SW25) mentioned above in Reset SW (under an elimination display and LED lighting). Moreover, if this SW is pushed while pushing the partial elimination SW (SW24) once and having set up the elimination range, a setup of partial elimination will be reset.

[0039] Moreover, if coincidence push of SW23 (sound recording mode SW) and SW24 (partial elimination SW) is carried out, a protection display ( drawing 5 R> 5 (c) ) will be performed for several seconds, applying incorrect elimination prevention protection to a current position letter. Protection information is recorded on solid-state memory 66 with sound recording data. When protection has started the letter of the current position, the "P" mark of void is always displayed ( drawing 4 (d), drawing 4 (j) ). If coincidence push of SW23 and SW24 is again carried out by the letter which has required protection, protection will be removed, the "P" mark of the void of a display will be erased, and the protection information currently recorded on sound recording data is eliminated. As mentioned above, when elimination actuation is performed to the letter which has required incorrect elimination prevention protection, alarm pronunciation is carried out and it does not eliminate by blinking a protection display ( drawing 5 (c) ).

[0040] Once it pushes SW27 to sound recording SW, it will record by sound recording displaying and ( drawing 4 (f) ) LED switching on the light. The sound signal inputted from the external microphone attached in the built-in microphone 51 or the microphone jack 16 is changed into digital data, and is recorded on solid-state memory 66 with various kinds of management information and additional signals (sound recording time information, E mark, I mark signal, etc.). It records, while only the same time amount as the voice data newly recorded in the voice data already recorded in overwrite sound recording mode according to the sound recording mode set up by SW23 eliminates. In insertion sound recording mode, data [ finishing / sound recording ] carry out insertion sound recording of the data newly recorded without eliminating in a sound recording starting position. When sound recording initiation is carried out in overwrite sound recording mode at the letter which has required incorrect elimination prevention protection, alarm pronunciation is carried out, protection display ( drawing 5 (c) ) flashing is carried out, and sound recording is forbidden. However, when there are no data to eliminate at the letter or the letter last edge where a sound recording starting position is new, it records irrespective of the existence of protection.

[0041] When the remaining capacity of solid-state memory 66 becomes 90 or less seconds, alarm pronunciation is carried out every 15 seconds, and the display (37 of drawing 3 ) of residual time is blinked. When the remaining capacity of memory is lost, alarm pronunciation is carried out and sound recording termination is carried out ( drawing 5 (i) ). It stops by Halt SW (SW28) or Playback SW (SW29) to carry out sound recording termination. When [ which turned ON Hold SW (SW11) during sound recording ] a case, i.e., power-source OFF, is carried out, sound recording is continued, and it is made not to receive an actuation input. SW28 stops sound recording, playback, and FF-REW by Halt SW. An indication under halt is given to no displaying ( drawing 4 (b) ) according to sound recording mode at the time of overwrite sound recording mode, and an insertion display ( drawing 4 (c) ) is performed at the time

of insertion sound recording mode. In a idle state, when there is no actuation input for several minutes, it shifts to a standby condition, and a power source is turned off ( drawing 4 (a)). When there is which actuation input in the state of standby, standby is canceled and it shifts to a mode of operation.

[0042] SW29 will be reproduced if SW29 is pushed by Playback SW ( drawing 4 (d)). At this time, it is already heard, and when the slide SW (SW13) for playback modes already hears it and is on the mode side, a playback display ( drawing 4 (e)) is performed and it reproduces by already hearing it and the usual 1.5 time \*\* already hearing it. When playback termination of the one letter is carried out, a letter is reproduced next succeeding. If a letter switches, alarm pronunciation will be carried out and the sound recording time of the following letter will be displayed for several seconds ( drawing 5 (d)). If it becomes the letter end of the last letter, alarm pronunciation will be carried out, and it will display, and playback ( drawing 5 (h)) will be ended. When it is detected that I mark signal is recorded into sound recording data during playback, I mark display ( drawing 4 (j)) is blinked for several seconds. When FFSW31 is pushed during playback, it skips to the next letter head. The sound recording time of the following letter is displayed for several seconds, and playback initiation is carried out from a letter head. When REWSW30 is pushed similarly, playback is performed from the letter head in front of [ of the letter under current playback ] one. Nothing is done, when FFSW31 is pushed during the last letter playback, or when REWSW30 is pushed during playback from a head letter. When it is made a power source OFF when hold SW11 is turned ON during playback namely, playback is continued and an actuation input is not received.

[0043] SW30 is REWSW, if SW30 is pushed from a idle state, will perform a rewinding display ( drawing 4 (h)), and will rewind it before the current position. A rewinding rate is processed by sound recording time amount irrespective of actual memory space. Namely, although twice as many memory space as the nature mode of bass is used in the nature mode of loud sound, a rewinding rate is performed at the same rate. It rewinds by 3X for [ of REW initiation ] several seconds. That is, the sound recording data for 3 seconds are rewound in 1 second. It accelerates every several seconds after that up to 6X, 12X, 24X, 48X, and 96X. Rewinding termination will be carried out if it comes at the head of a current letter during rewinding. When REW initiation is carried out from a letter head, it switches to the letter in front of one, and rewinding activation is carried out from the letter termination of a front letter. If it becomes the letter head of a head letter, alarm pronunciation will be carried out and rewinding prohibition will be carried out. There is no voice output during rewinding activation.

[0044] If SW31 is pushed from a idle state by FFSW, SW31 will perform a rapid-traverse display ( drawing 4 (g)), and will fast forward it after the current position. It accelerates and fast forwards from 3X to 96X every several seconds like REWSW, and if letter termination is reached, rapid-traverse termination will be carried out. When FF initiation is carried out from letter termination, rapid-traverse initiation is carried out from the next letter head. When the termination of the last letter is reached, alarm pronunciation is carried out, and it displays ( drawing 5 R> 5 (h)), and a rapid traverse is forbidden. When [ which turned ON Hold SW (SW11) into FF-REW ] a case, i.e., power-source OFF, is carried out, it continues FF-REW and an actuation input is not received. A power source is turned off after FF-REW termination.

[0045] Below, elimination actuation of this example is explained with reference to the flow chart of drawing 7 . S shall express a step with the following flow charts. When an operator eliminates voice data [ finishing / record ], the 1st operating member SW24, i.e., partial elimination, and the data range eliminated among playbacks SW29, REWSW30, and FFSW31 using one of the actuation SW are set up first (S101). If the elimination range is decided, by LCD63, an elimination display will be performed (S102) and an operator will be notified of elimination activation. Next, activation of elimination processing is postponed until the time amount which set the time amount for several seconds as the timer (S103), and was set as the timer passes (i.e., until it becomes time over) (S106). And when it judges whether the 2nd operating member SW11, i.e., a power source, or reset SW26 was operated in the meantime (S104, S105) and one of SW(s) is operated, an elimination display is erased by display reset of S109, and elimination activation is canceled. Moreover, when there is no input of the 2nd operating member in until time exaggerated, a display is reset by display reset of S107, and elimination processing is performed (S108).

[0046] Drawing 8 is a flow chart which shows the main routine after the system reset of the solid-state memory recorded message sender for telephone of this example. After resetting an internal circuitry by the system reset, when ON of the clock adjustment SW (not shown) is detected first (S201) and this SW is pushed, a clock display ( drawing 4 (a)) is performed and an internal clock is adjusted (S202). This is

because it is indicated by the clock in the state of power-source OFF and clock adjustment is enabled also in the state of power-source OFF. Next, if ON of a power source SW11 is detected (S203) and the power source SW11 is turned on, it will judge whether there is any SW input (S204). Mode processing is mentioned later and carried out according to SW inputted when there was a SW input (S205). Next, various kinds of idle states after mode processing activation are displayed (S206). In a idle state, the display in the letter number of the current position, the time amount from a letter head, the residual time that can be recorded, and sound recording mode is performed ( drawing 4 (b), (c)). Moreover, the inside of a partial elimination entry performs an elimination display ( drawing 5 (a)). Next, a flashing display is processed (S207). In a idle state, the elimination display under flashing of a cell alarm display when cell voltage becomes below predetermined level, and partial elimination setup is blinked.

[0047] On the other hand, when there is no SW input S204, a standby count is performed (S208), and when there is no SW input beyond count termination, i.e., predetermined time, it shifts to power-source off-mode (S209). Moreover, also when a power source SW11 is OFF in S203, it shifts to power-source off-mode (S209), and a display is switched to a clock display ( drawing 4 (a)), the power is turned off, and it shifts to a standby mode (S210). Although a recorded message sender for telephone is turned off by S210, the clock function and the clock display function are moving. A standby mode is canceled by the actuation input of one of SW(s), and returns after [ S201 ] powering on.

[0048] Drawing 9 and drawing 10 are flow charts which show the detailed actuation of mode processing of S205 shown in drawing 8 . First, when sound recording SW27 is ON in S211, it moves to sound recording mode (S212). Next, when playback SW29 is ON in S213, it moves to a playback mode (S214). Next, when FFSW31 is ON in S215, it moves and (S216) fast forwards in FF mode. The detail in in the above-mentioned sound recording mode, playback mode, and FF mode is mentioned later.

[0049] Next, when REWSW30 is ON in S217, it moves and (S218) rewinds in REW mode. Next, when the E mark SW18 turns on by S219, while progressing to S220 and updating a letter, E mark is displayed for several seconds ( drawing 4 (i)). However, when the current position is not the letter termination of the last letter, it does not update (it does not display). Moreover, when the number of letters exceeds 19, a display ( drawing 4 (i)) is blinked for several seconds, without updating, and alarm pronunciation is performed.

[0050] Moreover, when the I mark SW19 is ON in the following S221, addition record of the I mark signal is carried out by I mark addition record of S222 at the recorded voice data of the current position, and I mark is displayed on coincidence for several seconds ( drawing 4 (j)).

[0051] Next, when the sound recording mode SW23 is ON in S223, it progresses to S224 and judges whether they are the partial elimination SW24 and coincidence push, and when it is not coincidence push, it progresses to S225 and sound recording mode is switched. That is, when the present sound recording mode is a replace mode ( drawing 4 (b)), it switches and displays on an insert mode ( drawing 4 (c)), and when the present sound recording mode is an insert mode, it indicates by change-over at a replace mode. Moreover, when the sound recording mode SW and the partial elimination SW are judged by S224 to be coincidence push, a setup of partial elimination is canceled first (an elimination display is canceled), and incorrect elimination prevention protection processing is performed by protection processing of S229.

[0052] Moreover, when the partial elimination SW24 is ON in S226, it progresses to S227 and judges whether they are the sound recording mode SW23 and coincidence push, and when it is not coincidence push, it progresses to S228 and partial elimination processing is performed. The detail of partial elimination is mentioned later. Moreover, when the partial elimination SW and the sound recording mode SW are coincidence push in S227, after switching sound recording mode again first, it progresses to protection processing of S229, and incorrect elimination prevention protection processing is performed. In S229, when incorrect elimination prevention protection has not started the letter of the current position, addition record is carried out at voice data, protecting. A protection display ( drawing 5 (c)) is performed to coincidence for several seconds. Moreover, when protection has already started the letter of the current position, the protection information by which removes protection and addition record is carried out at voice data is eliminated.

[0053] Moreover, when the whole letter elimination SW25 is ON in S230, the whole letter elimination processing is performed by S231. The detail of the whole letter elimination is mentioned later. Next, when reset SW26 is ON in S232, a partial elimination entry is canceled by elimination reset of S233, and an

elimination display is erased.

[0054] Drawing 11 and drawing 12 are flow charts which show detailed actuation in the sound recording mode of S212 of drawing 9. First, in S301, sound recording mode is displayed "REC" (drawing 4 R> 4 (f)), and LED64 is turned on to coincidence. Next, an alarm is pronounced, while progressing to S322 and displaying (drawing 5 (i)), when there is no remaining memory space which can be recorded by S302. And a display is blinked during the pronunciation of an alarm. When it is going to progress to decision whether there is any protection of S303 when it remains by S302 and there is memory space, and it is going to carry out sound recording initiation in a replace mode from the letter middle, it judges [ whether incorrect elimination prevention protection has started the letter of the current position, and ], if protection has started, it will progress to S321, and a protection display (drawing 5 (c)) is indicated by flashing, and a protection alarm is pronounced.

[0055] Moreover, when protection has not started by S303, it progresses to S304 and records one frame at a time. In this example, it is changed in the nature mode of loud sound every 24msec(s), it is changed into 12 bytes of digital data in 24 bytes and the nature mode of bass, and a sound signal is recorded on solid-state memory 66. After sound recording record is carried out, the end display and end alarm which progressed to S322 when the remaining memory space which can be recorded by S305 was lost, and were mentioned above are performed. Moreover, when it remains by S305 and there is capacity, it progresses to S306, and it judges whether it is ON, and in ON (i.e., the case of a power source SWOFF), hold SW11 flies to S318, and performs a sound recording display. When hold SW11 is OFF in S306, it judges whether it progresses to S307 and there is any SW input. That is, halt SW28 and playback SW29 are detected, and when there is one of SW inputs, sound recording termination is carried out.

[0056] When there is no SW input S307, the E mark SW18 judges whether it is ON by S308, and renewal of a letter of the case of ON is carried out by S309. The conditions which carry out renewal of a letter are as having mentioned above. That is, when E mark during several seconds is displayed (drawing 4 R> 4 (i)) and 19 is counted with the number of letters, it indicates by flashing and renewal of a letter is not performed. It only displays and the count of display flashing time amount is performed by S318 and S320 which are mentioned later S309. When the E mark SW18 is OFF in S308, the I mark SW19 judges whether it is ON by S310, in ON, addition record of the I mark signal is carried out by S311 at voice data, and it performs I mark display (drawing 4 (j)).

[0057] Moreover, in ON, when the I mark SW19 is OFF in S310, the sound recording mode SW23 judges whether it is ON by S312, and it progresses to S313 and judges whether they are the partial elimination SW24 and coincidence push, and when there is nothing at coincidence push, sound recording mode is switched by S314. Moreover, in the coincidence push by S313, it progresses to protection processing of S317, and it performs incorrect elimination prevention protection processing.

[0058] Moreover, when the sound recording mode SW23 is OFF in S312, the partial elimination SW24 judges whether it is ON by S315, in ON, it judges whether they are the sound recording mode SW23 and coincidence push by S316, and in coincidence push, after switching sound recording mode again, it progresses to protection processing of S317, and it performs incorrect elimination prevention protection processing. Moreover, when incorrect elimination prevention protection has not started the letter of the current position, a protection display (drawing 5 (c)) is performed and addition record of the protection information is carried out at voice data. When protection has already started, protection information [ finishing / record ] is eliminated. Elimination actuation is not performed in sound recording mode.

[0059] Moreover, when the partial elimination SW24 is OFF in S315, regeneration of the letter number of the current position, the sound recording time amount from a letter head, and the residual time that can be recorded is carried out by the sound recording display of S318. Moreover, the display time of the contents displayed by S309, S311, and S317 is counted, and it returns after predetermined time at the original record display (drawing 4 (f)).

[0060] Next, a flashing display is processed by S320. E mark display (drawing 4 (i)) when the number of letters exceeds 19 by the alarm display (drawing 5 (f)) of cell voltage and S309 carries out flashing processing in sound recording mode.

[0061] Drawing 13 and drawing 14 are flow charts which show detailed actuation of the playback mode of S214 of drawing 9. First, in S401, a playback mode is displayed according to the reproduction speed set up with reproduction speed SW (drawing 4 (d), (e)). "PLAY" Next, when the current position is a memory end in S402 (i.e., when [ the case where it is the letter termination of the last letter, and when there are

no sound recording data (all memory elimination conditions) ]), it progresses to S409, it displays ( drawing 5 (h)), and an alarm is pronounced. By S402, memory and when not coming out, the current position judges whether it is a letter head S403, in the case of a letter head, it progresses to S406, and it displays the sound recording time of the present letter ( drawing 5 (d)).

[0062] Moreover, when it is not a letter head in S403, the current position judges whether it is letter termination by S404, and in the case of letter termination, the following hotel stationery is performed by S405. That is, it sets at the tip of a letter of the following letter number, and sound recording time is displayed (S406).

[0063] Next, voice playback is performed by S407. Usually, by playback of a rate, every 24msec(s), it is already heard, and by the playback mode, the digital data for one frame is read from solid-state memory 66 every 16msec(s), and it changes and outputs to a sound signal. Next, it judges whether it is a memory end by S408, and, in the case of a memory end, progresses to S409, it displays ( drawing 5 (h)), and an alarm is pronounced. Moreover, when judging whether it reproduced to letter termination by S410 memory and when not coming out and not reproducing to a letter tip by S408, it progresses to S414, and when it reproduces to letter termination, the following hotel stationery is performed by S411. That is, it sets to the letter head of the following letter number, and the time in which the letter was recorded is displayed (S412). And in the following S413, the letter alarm for notifying of the letter having switched during playback is pronounced.

[0064] Next, hold SW11 judges whether it is ON by S414, in ON, it progresses to S434, and it performs a playback display. Moreover, when hold SW11 is OFF in S414, whether there being any switch input by S415 and halt SW28 SW27, i.e., sound recording, judge whether it is ON, and it carries out playback termination of the time of ON.

[0065] Moreover, when there is no switch input S415, it progresses to S416 and FFSW31 judges whether it is ON, and when FFSW31 is ON, the following hotel stationery is performed by S417. That is, it skips to the following letter, sets to a letter head, sound recording time is displayed (S( drawing 5 (d)) 420), and the letter alarm in which it is shown that the letter switched is pronounced (S421). It progresses to S418 without doing anything, when FFSW31 is OFF in S416 here. In S418, REWSW30 judges whether it is ON and performs front hotel stationery S419 at the time of ON. That is, it sets to the letter head of the letter in front of [ of a current position letter ] one, sound recording time is displayed, and a letter alarm is pronounced (420 S 421).

[0066] Moreover, when REWSW30 is OFF in S418, the sound recording mode SW23 judges whether it is ON by S422, it progresses to S423 at the time of ON, and it judges whether they are the partial elimination SW24 and coincidence push. In the coincidence push by here, after canceling a partial elimination setup by protection processing of S426, incorrect elimination prevention protection is processed. Moreover, when the sound recording mode SW23 is OFF in S422, the partial elimination SW24 judges whether it is ON by S424, it progresses to S425 at the time of ON, and it judges whether they are the sound recording mode switch SW(sound recording mode SW) 23 and coincidence push, in coincidence push, it progresses to protection processing of S426, and it processes incorrect elimination prevention protection. When protection has not started a current position letter here, a protection display ( drawing 5 (c)) is performed and addition record of the protection information is carried out at voice data. When protection has already started, protection information [ finishing / record ] is eliminated. Moreover, when it is not coincidence push in S425, it progresses to S427 and partial elimination is performed. The detail of partial elimination is mentioned later. A change in sound recording mode is not made during playback.

[0067] Moreover, when the partial elimination SW24 is OFF in S424, the whole letter elimination SW25 judges whether it is ON by S428, and the whole letter elimination is performed by S429 at the time of ON. The detail of the whole letter elimination is mentioned later. Moreover, when the whole letter elimination SW25 is OFF in S428, reset SW26 judges whether it is ON by S430, a partial elimination setup is canceled by elimination reset of S431 at the time of ON, and it stops elimination display flashing.

[0068] Moreover, when reset SW26 is OFF in S430, the I mark SW19 judges whether it is ON by S432, addition record of the I mark signal is carried out at the time of ON, and it displays I mark on the voice data of the frame reproduced by I mark addition record of S433 ( drawing 4 (j)). Moreover, when the I mark SW19 is OFF in S432, regeneration of the letter number of the current position, the time amount from a letter head, and the residual time that can be recorded is carried out by the playback display of



S434. However, when sound recording time is displayed by S406, S412, and S420, it does not indicate by predetermined time. Moreover, when it indicates by protection by the time of displaying sound recording time by S406, S412, and S420, and S426, when it indicates by I mark by S433, display time is counted, and it returns after predetermined time at the original display ( drawing 4 (d), (e)). However, the inside of a partial elimination entry blinks an elimination display ( drawing 5 (a)).

[0069] A flashing display is performed in the following S435. The flashing display under playback performs the alarm display ( drawing 5 R> 5 (f)) when cell voltage falling, and the elimination display under partial elimination setup ( drawing 5 (a)). Moreover, when addition record of the I mark signal mentioned above in the voice data of the reproduced frame is carried out, only predetermined time indicates the I mark display ( drawing 4 (j)) by flashing.

[0070] Drawing 15 and drawing 16 are detail flowcharts which show actuation in FF mode of S216 of drawing 9. First, FF mode is displayed by S501 "FF" ( drawing 4 (g)). Next, in decision of being the memory end of 502, it judges whether the current position has the letter termination of the last letter, or recorded data, and progresses to S511 at the time of YES, it displays ( drawing 5 (h)), and an alarm is pronounced.

[0071] Moreover, by S502, memory and when not coming out, the current position judges whether it is a letter head S503, and in the case of a head, the time which recorded the current letter by S506 is displayed. On the other hand, when it is not a letter head in S504, the current position judges whether it is letter termination by S504, and as for the case of letter termination, the following hotel stationery is performed by S505. That is, it sets to the next letter head and sound recording time is displayed (S506). Next, in S507, the timer for making FF rate quick for every predetermined time is set. In the following S508, whenever a timer measures 32msec(s), the current position is moved. That is, since need to rotate a tape and it is not necessary to fast forward it like the recorded message sender for telephone using a magnetic tape in this recorded message sender for telephone, the address of the solid-state memory 66 which recorded voice data for every predetermined time is predetermined-time[ every ]-updated (S509).

[0072] Next, when it judges whether the current position reached the letter termination of the last letter and reaches in decision of being the memory end of S510, it progresses to S511, and displays ( drawing 5 (h)), and an alarm is pronounced. Moreover, by S510, memory and when not coming out, it judges whether the current position reached letter termination S512, and FF actuation is ended when letter termination is reached.

[0073] Moreover, when it is not letter termination in S512, FF rate rise timer set by S507 is counted, and FF rate is made quick for every predetermined time (513 S 514). At this example, it fast forwards by 3X for [ of the beginning ] 3 seconds. That is, the voice data for 96msec(s) is fast forwarded every 32msec (s). In this example, since the sound signal is digitized every one-frame 24msec(s), the voice data for 96msec(s) is equivalent to the voice data for four frames. If 3 seconds pass from rapid-traverse initiation, FF rate will be set to 6X and 15 seconds will be set to FF rate rise timer. It accelerates every 1.5 seconds henceforth up to 12 times as many → [ as this ] 24 times as many → [ as this ] 48 times as many → [ as this ] 96 times.

[0074] Next, in the present position indication of S515, the time amount and the residual time which can be recorded from a letter tip of the current position which carried out renewal of a rapid traverse are displayed. A flashing display is processed in S516. The flashing display in FF mode is only cell warning when cell voltage becomes below predetermined level. In S517, hold SW11 judges whether it is ON, and it flies to S508 at the time of ON, i.e., when a power source SW is OFF. When hold SW11 is OFF in S517, it judges whether there is any SW input of S518. And in with SW input (i.e., when sound recording SW27, halt SW28, playback SW29, REWSW30, partial elimination SW24, and the whole letter elimination SW25 are pushed in FF mode), a rapid traverse is stopped.

[0075] As mentioned above, although the actuation at the time of FF mode was explained, the detail of the actuation at the time of REW mode is the same as that of the actuation at the time of FF mode. Drawing 17 and 18 are flow charts which show detailed actuation of S228 of drawing 10, and the partial washout mode of S427 of drawing 13. First, in S601, it ends without doing anything, when there are no data [ finishing / sound recording ]. Next, the setting initiation or setting termination of partial elimination whether it is the 1st actuation input by the partial elimination SW24 is judged by S602. In the 1st actuation input, it progresses to S615 here, the current position is memorized, and flashing of the "ERASE" display ( drawing 5 (a)) and LED24 of LCD23 is set up and started by elimination display

flashing setup of S616. Moreover, when are judged with it being the 2nd actuation input in S602, and the partial elimination range is decided, it judges with setting termination of partial elimination. Next, it judges whether there is any elimination section by S603. That is, it judges whether the current position is the same as the elimination starting position memorized by S615. Since there is no voice data to eliminate when the same, this mode is ended.

[0076] Moreover, when the elimination starting position and the current position which were memorized by S603 S615 are not the same (i.e., when the elimination data range is set up and it is judged as those with the elimination section), it judges that they are those with protection by S604. That is, it judges whether incorrect elimination prevention protection has started altogether the voice data from an elimination starting position to the current position. When an elimination starting position and the current position are the same letters here, it judges whether protection has started the letter now. When protection of each letter and the protection information on all the letters inserted in between are detected and protection has started all data, in the case of a different letter, the incorrect elimination prevention protection display ( drawing 5 (c)) is indicated by predetermined time flashing by the protection display of S614, and it pronounces a protection alarm.

[0077] LED64 is also turned on, while progressing to the elimination display of S605 and continuing turning on the "ERASE" display ( drawing 5 (a)) of LCD63, when the data with which protection nothing, i.e., a part, has not required protection by S604 exist. Next, the timer delayed by the timer 3-second set of S606 for 3 seconds in elimination activation is set. That is, for 3 seconds waits for elimination activation in this example. And mode termination is carried out without carrying out elimination activation, when OFF SW, i.e., a hold, is turned on by the power source SW11 while [ 3 seconds ] waiting for elimination activation, or (S607) reset SW26 is turned on (S608).

[0078] On the other hand, while the power source SW11 has been ON, when there is no input of reset SW26, a flashing display is processed (S609), and it waits for 3 seconds (S610). The flashing display of S609 is only an alarm display of cell voltage. If 3 seconds is counted by S610, an elimination display and LED will be erased by display reset of S611, and partial elimination will be performed (S612). Partial elimination eliminates all the voice data that has not required the incorrect elimination prevention protection from an elimination starting position to the current position. Next, it judges whether they are those with protection by S613. That is, when the voice data of a letter with which the part has also required incorrect elimination prevention protection for the voice data from an elimination starting position to the current position is contained, it progresses to S614 and predetermined time flashing of the protection display ( drawing 5 (c)) is carried out, and a protection alarm is pronounced.

[0079] Drawing 6 is drawing showing the situation of the above-mentioned partial elimination. Since an elimination starting position is memorized and a display is blinked, if drawing 6 (a) performs 1st actuation first in the mid-position B point of a letter 1, it moves to the E mid-position of a letter 3 and 2nd actuation is performed by one actuation SW of playback and FF, and REW, after turning on a display for several seconds, the recorded data of a before [ from a B point / E points ] will be eliminated. Drawing 6 (b) shows the situation after elimination. As shown in this drawing, a letter 1 is eliminated from a B point to C point, and after elimination becomes only a B point from an A point. Moreover, the whole letter is eliminated and a letter 2 is lost. A letter 3 gets one number blocked, it becomes a letter 2, and from E points to F points remain. When a B point is set up first and then E points are set up, the current position after elimination is set to the head of E points, i.e., a letter. When E points are set up first and then a B point is set up, the current position after elimination is set to a B point, i.e., the last edge of a letter 1. Moreover, when incorrect elimination prevention protection has started the letter 2 ( drawing 6 (c)), partial elimination of a letter 1 and the letter 3 is carried out, respectively, and a letter 2 remains, without being eliminated ( drawing 6 (d)).

[0080] Drawing 19 and 20 are flow charts which show detailed actuation of S231 of drawing 10 , and the whole letter washout mode of S429 of drawing 14 . First, in S701, it ends without carrying out [ any ] whether there are any data [ finishing / sound recording ], when it judges and there are no data. Next, in decision of being those of S702 with protection, whether incorrect elimination prevention protection has started the letter of the current position, and when it judges and protection has started, it progresses to S721 and predetermined time flashing of the protection display ( drawing 5 (c)) is carried out, and a protection alarm is pronounced and it ends.

[0081] On the other hand, when protection has not started a protection nothing, i.e., the current position,

letter by decision of S702, an elimination display ( drawing 5 (a)) and LED64 are turned on by S703. Next, in flag reset of S704, in order [ whole ] to judge whether whole elimination is performed with SW flag for judging that it was continued for 3 seconds whether pushing elimination SW25, an elimination flag is reset. By the timer 3-second set of S705, the 3-second timer which becomes a timer for switching to whole elimination by continuing pushing elimination SW25 for 3 seconds and a timer for elimination activation being delayed for 3 seconds is set, and the hold SW when a power source SW11 is turned off during a timer count -- ON -- becoming (S706) -- when reset SW26 is turned on (S707), elimination activation is stopped, and the mode is ended.

[0082] Moreover, it judges whether the whole letter elimination SW25 was turned off by S708 during the timer count, and, in ON, progresses to S710, and when turned off, SW flag is set by S709. A flashing display is processed in S710. Only flashing ( drawing 5 (f)) of cell warning when cell voltage is low blinks here.

[0083] And it judges whether 3 seconds passed in S711, and if 3 seconds pass, it will judge whether it progresses to S712 and the whole elimination flag is set. Since the whole elimination flag is not set at first, it progresses to S713, and it judges whether SW flag is set. And when the whole letter elimination SW25 is turned off in [ of the beginning ] 3 seconds, after [ when SW flag is set, namely, ] progressing to display reset of S716 and turning OFF an elimination display, the letter of the current position is eliminated by S717. Moreover, when SW flag is not set by S713, when the whole letter elimination SW25 is continuing being pushed for [ of the beginning ] 3 seconds, it progresses to S714 and a whole elimination flag is set, whole elimination is displayed by S715 ( drawing 5 (b)), it returns to S705, and elimination activation is delayed for 3 more seconds.

[0084] A power source SW11 is not turned off in these 3 seconds, but on the other hand, when reset SW26 does not turn on, it progresses to S712, and it judges again whether the whole elimination flag is set. Whole elimination is performed, after progressing to elimination display reset of S718 and erasing an elimination display shortly, since the whole elimination flag is set (S719). All the letters that protection has not required are eliminated in whole elimination. At this time, it judges that they are those with protection by S720, when the letter which has required at least one protection exists, it progresses to S721 and a protection display ( drawing 5 (c)) is blinked for several seconds, and a protection alarm is pronounced.

[0085] Thus, after elimination by whole this example waits for 3 more seconds after continuing pushing elimination SW25 for [ of the beginning ] 3 seconds and indicating whole elimination, it performs. All elimination is stopped, when a power source SW11 is turned OFF between them or reset SW26 is turned ON.

[0086] In addition, when there is the need for a display, a flashing indication of S207 of drawing 8 , S320 of drawing 12 , S435 of drawing 14 , S516 of drawing 16 , S609 of drawing 18 , and the flashing display process of S710 of drawing 19 is given only during a setup of the time of cell voltage becoming below predetermined level, or partial elimination. When there is no need for a display (i.e., when omitting a setup of the time when cell voltage is high enough, or partial elimination), neither of the processings is performed.

[0087] In case the data of a request of sound recording data [ finishing / sound recording ] are eliminated according to the above-mentioned example, since activation of elimination processing can be canceled by delaying activation of predetermined time elimination processing after decision of an elimination actuation input, and turning on Reset SW in the meantime, or carrying out a power source SW to OFF, it becomes possible to prevent incorrect elimination by the operation mistake. Moreover, since elimination is automatically performed when the above-mentioned actuation is not made in predetermined time, the operability of a recorded message sender for telephone is not spoiled.

[0088] Moreover, since a display performs a different display from the display by which it is indicated by predetermined time after a setup of the elimination range while setting up the elimination range of the voice data recorded on solid-state memory, an operator can distinguish easily the setting period of the elimination range, and the delay period of elimination activation.

[0089] Moreover, since the combination of luminescence and an alphabetic character was made to perform the display about elimination activation, an operator can make smaller possibility of overlooking the setting period of the elimination range, or the delay period of elimination activation.

[0090] As described above, the voice data processor of this example A voice data record means to



record on the solid-state memory 66 which can rewrite the sound signal changed into the digital data (CPU65). An elimination means (the partial elimination SW24, the whole letter elimination SW25) to eliminate the voice data recorded on solid-state memory 66. The 1st actuation means for setting up the elimination range of the voice data recorded on solid-state memory 66 (the partial elimination SW24 and playbacks SW29, REWSW30, and FFSW31). A delay means to delay predetermined time (for 3 seconds) elimination activation after a setup of the elimination range (CPU65). The above-mentioned predetermined time and a display means to display the predetermined information (the "ERASE" display of LCD63, and lighting display of LED64) about elimination activation (LCD63, LED64). The 2nd actuation means for canceling elimination activation (reset SW26 or power source SW11). Elimination is not performed when the 2nd actuation means (reset SW26 or power source SW11) is operated during the above-mentioned display. When the 2nd actuation means is not operated during the above-mentioned display, the control means (CPU65) which performs elimination of voice data with an elimination means (the partial elimination SW24, letter elimination SW25) is provided.

[0091] Moreover, the above-mentioned display means (LCD63, LED64) performs a different display from the display by which the elimination range of the voice data recorded on solid-state memory 66 is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means. That is, the "ERASE" display and LED64 of LCD63 are blinked during a setup of the elimination range, and the predetermined time after an elimination entry performs the "ERASE" display of LCD63, and the lighting display of LED64. Thus, the display about elimination activation is performed by the combination of luminescence (luminescence of LED64), and an alphabetic character (ERASE).

[0092] Furthermore, the technical thought of the following configurations is drawn from the above-mentioned concrete example, and the following effectiveness is done so.

(1) A voice data record means to record on the solid-state memory which can rewrite the sound signal changed into the digital data. An elimination means to eliminate the voice data recorded on solid-state memory, and the 1st actuation means for setting up the elimination range of the voice data recorded on solid-state memory. A delay means to delay predetermined time elimination activation after a setup of the elimination range, and the above-mentioned predetermined time and a display means to display the predetermined information about elimination activation. The voice data processor possessing the control means which elimination is not performed when the 2nd actuation means is operated during the above-mentioned display with the 2nd actuation means for canceling elimination activation, but performs elimination of voice data with an elimination means when the 2nd actuation means is not operated during the above-mentioned display.

(2) For the display by which the elimination range of the voice data recorded on solid-state memory is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means, a display means is a voice data processor given in the configuration (1) which performs a different display.

(3) The display about elimination activation is a voice data processor the configuration (1) performed with the combination of luminescence and an alphabetic character, or given in (2).

[0093] According to the voice data processor given in the above-mentioned configuration (1), an operator can prevent eliminating recorded data by the operation mistake. Moreover, according to the voice data processor given in a configuration (2), in addition to the effectiveness of the voice data processor of a publication, an operator can distinguish now easily the setting period of the elimination range, and the delay period of elimination activation in a configuration (1).

[0094] Moreover, according to the voice data processor given in a configuration (3), possibility that an operator will overlook the setting period of the elimination range or the delay period of elimination activation in a configuration (1) or a configuration (2) in addition to the effectiveness of the voice data processor of a publication can be made smaller.

[0095]

[Effect of the Invention] According to invention according to claim 1, the effectiveness that it can prevent that an operator eliminates recorded data by the operation mistake is done so. Moreover, according to invention according to claim 2, in addition to an effect of the invention according to claim 1, an operator does so the effectiveness that the setting period of the elimination range and the delay period of elimination activation are easily distinguishable.

[0096] Moreover, according to invention according to claim 3, in addition to an effect of the invention

according to claim 1 or 2, the effectiveness which can make smaller possibility that an operator will overlook the setting period of the elimination range or the delay period of elimination activation is done so.

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**TECHNICAL FIELD**

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[Industrial Application] This invention relates to a voice data processor.

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**PRIOR ART**

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[Description of the Prior Art] Now, the equipment which carries out record playback of the sound signal at a magnetic tape is widely used as one of the voice data processors. In such equipment, in order to eliminate the contents recorded once, it becomes possible by performing only elimination, without recording or recording a non-signal. In any case, mechanical actuation is required, and a setup of the exact elimination range is difficult. Moreover, it must run actually eliminating a tape and excessive time amount is required. Moreover, since the eliminated part remains as a blank part, an unnatural impression is received when the tape which eliminated some recorded contents is played. Sound recording was usually redone for these faults.

[0003] Moreover, in the so-called dictate transcription system, the activity which a predetermined operator text-izes an unspecified sound recording person's recorded tape, and returns a sound recording person a tape again is done. Since the same tape as the original sound recording person is not necessarily returned at this time, the activity which eliminates a tape once is needed. For this reason, it had the high-speed elimination function which rewinds while eliminating to these equipments.

[0004] Then, a sound signal is changed into a magnetic tape which was described above at digital data as equipment which replaces the equipment which carries out record playback, and the so-called digital recorder which carries out record playback is put in practical use by rewritable solid-state memory. JP,63-259700,A is indicating such a digital recorder.

[0005] Since the contents recorded in the digital recorder are recorded as digital data, they can eliminate and connect the part of arbitration. Moreover, since record data are eliminable in an instant, the elimination function which was not former not much useful attracts attention as an important function.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] According to invention according to claim 1, the effectiveness that it can prevent that an operator eliminates recorded data by the operation mistake is done so. Moreover, according to invention according to claim 2, in addition to an effect of the invention according to claim 1, an operator does so the effectiveness that the setting period of the elimination range and the delay period of elimination activation are easily distinguishable.

[0096] Moreover, according to invention according to claim 3, in addition to an effect of the invention according to claim 1 or 2, the effectiveness which can make smaller possibility that an operator will overlook the setting period of the elimination range or the delay period of elimination activation is done so.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] However, in the above-mentioned digital recorder, since data [ finishing / record ] will be eliminated within an instant if elimination actuation is performed, the so-called operation mistake becomes a problem. That is, although a great portion of contents can be revitalized by canceling this immediately with the equipment recorded on a magnetic tape even if it carries out elimination actuation accidentally, in the case of a digital recorder, the contents will be eliminated [ no ] within an instant and this can be revitalized.

[0007] Then, although it was possible to add the function to require confirmation operation of an operator again when eliminating recorded data as used by the computer system etc., it was difficult to realize such a function by the display and control unit to which a small system like a voice data processor was restricted.

[0008] The voice data processor of this invention is made paying attention to such a technical problem, and the place made into the purpose is to offer the voice data processor which can prevent that an operator eliminates recorded data by the operation mistake.

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**MEANS**

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[Means for Solving the Problem] In order to attain the above-mentioned purpose, the voice data processor concerning the 1st invention A voice data record means to record on the solid-state memory which can rewrite the sound signal changed into the digital data, An elimination means to eliminate the voice data recorded on solid-state memory, and the 1st actuation means for setting up the elimination range of the voice data recorded on solid-state memory, A delay means to delay predetermined time elimination activation after a setup of the elimination range, and the above-mentioned predetermined time and a display means to display the predetermined information about elimination activation, When the 2nd actuation means is operated during the above-mentioned display with the 2nd actuation means for canceling elimination activation, elimination is not performed, but when the 2nd actuation means is not operated during the above-mentioned display, the control means which performs elimination of voice data with an elimination means is provided.

[0010] Moreover, the voice data processor concerning the 2nd invention performs the display in which a display means differs from the display by which the elimination range of the voice data recorded on solid-state memory is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means in the voice data processor concerning the 1st invention.

[0011] Moreover, the voice data processor concerning the 3rd invention performs the display about elimination activation with the combination of luminescence and an alphabetic character in the voice data processor concerning the 1st or 2nd invention.

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**OPERATION**

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[Function] That is, in the voice data processor concerning the 1st invention, it records on the solid-state memory which can rewrite the sound signal changed into the digital data with a voice data record means. Next, the elimination range of the voice data recorded on solid-state memory is set up with the 1st actuation means, and predetermined time elimination activation is delayed with a delay means after a setup of the elimination range. At this time, a display means displays the above-mentioned predetermined time and the predetermined information about elimination activation. And when the 2nd actuation means for canceling elimination activation during the above-mentioned display is operated, elimination is not performed, but when the 2nd actuation means is not operated during the above-mentioned display, elimination of the voice data based on an elimination means is performed.

[0013] Moreover, the voice data processor concerning the 2nd invention is made to perform a display which is different from the display by which it is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means in the elimination range of the voice data recorded on solid-state memory in the voice data processor concerning the 1st invention.

[0014] Moreover, the voice data processor concerning the 3rd invention is made to perform the display about elimination activation with the combination of luminescence and an alphabetic character in the voice data processor concerning the 1st or 2nd invention.

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**EXAMPLE**

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[Example] Hereafter, one example of this invention is explained to a detail with reference to a drawing. Drawing 1 is drawing showing the configuration of the solid-state memory recorded message sender for telephone (digital recorder) with which this invention is applied. In this drawing, the built-in microphone 51 is connected to CPU65 through the input amplifier 53, BPF (band pass filter)55, A/D converter (A/D) 56, and the coding section 60 in order. Moreover, the built-in loudspeaker 52 is connected to CPU65 through the output amplifier 54, LPF (low pass filter)57, D/A converter (D/A) 58, and the decryption section 61 in order. Here, BPF55, A/D converter 56, LPF57, and D/A converter 58 constitute CODEC (coder decoder)59, and the coding section 60 and the decryption section 61 constitute DSP (digital signal processor)62.

[0016] LCD (liquid crystal display section)63, red (only referred to as LED below) LED 64 and solid-state memory 66, the actuation input section 67, and the power control section 68 are further connected to CPU65.

[0017] In the above-mentioned configuration, at the time of audio record, the sound signal inputted from the built-in microphone 51 is amplified with the input amplifier 53, and is inputted into CODEC59. In CODEC59, after letting BPF55 pass, A/D conversion is carried out by A/D converter 56. Here, the passage frequency band of BPF55 is 300Hz - 3.4kHz, the sampling frequency at the time of A/D conversion is 8kHz, and the number of quantization is 8 bits. The digital data by which A/D conversion was carried out is sent to DSP62, and compression processing is carried out per one frame in the coding section 60. In this example, data of one frame are compressed into 12 bytes of data 24msec periods at the time of 24 bytes and the nature mode of bass at the time of the nature mode of loud sound. The compressed voice data is sent to CPU65 per frame, and is memorized by solid-state memory 66 with various kinds of additional information. 16M bit data are recordable on solid-state memory 66.

[0018] At the time of audio playback, voice data [ finishing / sound recording ] is sent to CPU65 per one frame, and is further sent to DSP62 at solid-state memory 66. The voice data sent to DSP62 is decrypted in the decryption section 61, is changed into 8 8kHz bit data, and is sent to CODEC59. In CODEC59, the received digital data is changed into a sound signal by the D/A transducer 58, and it outputs through LPF57. The sound signal outputted from CODEC59 is amplified with the output amplifier 54, and a voice output is carried out from the built-in loudspeaker 52.

[0019] CPU65 is a 8-bit 1 chip microcomputer with a ROM capacity [ of 16 K bytes ], and a RAM capacity of 1 K byte, and performs mode setting of sound recording and playback according to the actuation input from the actuation input section 67. Moreover, file management of the voice data recorded on solid-state memory 66 is carried out per letter, and the memory writing and read-out at the time of sound recording and playback are controlled. Furthermore, CPU65 eliminates voice data [ finishing / record to solid-state memory 66 ] according to the actuation input from the actuation input section 67. Moreover, CPU65 displays the mode in which various kinds of modes of a recorded message sender for telephone are performed and performed according to the actuation input from the actuation input section 67 on LCD63 and LED64.

[0020] Furthermore, CPU65 controls the power control section 68 according to the input of the power source SW in the actuation input section 67. And when a power source SW is set as OFF, the current supply to the I/O amplifier 53 and 54, CODEC59 and DSP62, and solid-state memory 66 is suspended, and it switches to low consumed-electric-current mode, and only the clock function in CPU65 is

operated, and a clock display is performed by LCD63.

[0021] Drawing 2 is the external view of the solid-state memory recorded message sender for telephone shown in drawing 1 , and the actuation SW of the various kinds which constitute the actuation input section 67 shown in drawing 1 , and LCD63 and the LED64 grade which constitutes a display are prepared. The actuation input section 67 consists of 11 push SW and three slides SW, and performs mode setting of a sound recording playback machine, and various kinds of actuation.

[0022] Drawing 3 is the segment Fig. of the liquid crystal display by LCD63, and performs a mode display and various kinds of information displays of a recorded message sender for telephone. Drawing 4 and drawing 5 are drawings showing each example of a display. Drawing 4 (a) is the display at the time of a power source OFF, and drawing 4 (b) is the display at the time of the power source ON of a replace mode. Drawing 4 (c) is the display at the time of the power source ON in insertion sound recording mode, and drawing 4 R> 4 (d) is the display under playback. Drawing 4 (e) is already heard, and is the display under playback, and drawing 4 (f) is the display under sound recording. Drawing 4 (g) is the display under rapid traverse (FF), and drawing 4 (h) is the display under rewinding (REW). Drawing 4 (i) is the display under E mark (en doping letter) record. Drawing 4 (j) is the display under I mark (instruction mark) record. Drawing 5 (a) is the display under a partial elimination setup and partial elimination and letter elimination hold. Drawing 5 (b) is the display under whole elimination hold, and drawing 5 (c) is the display at the time of setting up incorrect elimination prevention protection, and the time of a protection alarm. Drawing 5 (d) is the sound recording time display when reproducing a letter head, and drawing 5 (e) is the power-resource display of a power up (at the time of standby discharge). Drawing 5 R> 5 (f) is a working dc-battery alarm display, and drawing 5 (g) is the display at the time of the lock of operation by the fall of battery voltage. Drawing 5 (h) is a display when playback and FF make a memory end, and drawing 5 (i) is a display when the memory remaining capacity is lost during sound recording.

[0023] Moreover, in drawing 3 , 32 is the segment which shows a cell residue, and when a cell residue carries out power-source ON of a certain time more than predetermined level, the light is switched on for several seconds ( drawing 5 (e)). When cell level becomes below predetermined, only the outside segment is indicated by flashing ( drawing 5 (f)). When a cell residue furthermore decreases, an outside segment is turned on for several seconds, the mode under activation is stopped, and it shifts to a power-source OFF condition, and it is made a clock display ( drawing 5 (g)).

[0024] 33 is a segment which displays the mode of operation and various kinds of established states of a recorder. 34 is a segment which shows a current letter number. In this example, file management of the recorded voice data is carried out per letter, and it can record a maximum of 19 letters (file). 35 is the segment turned on when displaying the date and time of day which were recorded, and when the letter head section is reproduced, it indicates the date when finally carrying out sound recording termination of the letter, and the time of day by predetermined time ( drawing 5 (d)). The date and time of day which were recorded are recorded on solid-state memory 66 with voice data. Although the time of day which carried out sound recording termination is displayed on the last in this example, this may be the time of day which carried out sound recording initiation at the last, and may be the time of day which ended [ which was ended and sound-recording-began ] the letter first. Or the time of day of the real time under sound recording may be recorded and displayed with sound recording data.

[0025] 36 is the segment which displays the date and the time amount from a letter head, displays a current date at the time of a power source OFF, and displays the sound recording time amount from a letter head per second at the time of a power source ON. 37 displays current time at the time of a power source OFF by the segment which displays the residual time in which time of day and sound recording are possible, and displays the residual time which can be recorded per part at the time of a power source ON.

[0026] Furthermore, in drawing 2 , the light is switched on during sound recording elimination, and LED64 displays a mode of operation. Moreover, at the time of various kinds of alarm pronunciation mentioned later, an alarm sound is interlocked with and it blinks. Moreover, when voice input level is low and it changes into a sound recording standby condition during the sound recording by voice starting mode, it indicates by flashing. Moreover, 15 is a stereo jack by the foot [ an earphone jack-cum-] remote control SW input jack, and, in the piece channel, another [ an earphone output terminal and ] channel has become a foot SW remote control input terminal. 16 is a stereo jack by the hand [ a microphone jack-cum-] remote control SW input jack, and, in the piece channel, the microphone input terminal and

another channel have become a hand remote control input terminal. Furthermore, volume 14 is sound-volume volume and adjusts the volume control under playback, and the starting level under voice starting mode sound recording.

[0027] The display of the function of each actuation SW shown below at drawing 2 and LCD63 when each actuation SW is operated is explained. Slide SW11 is the power source SW which served as Hold SW, carries out a liquid crystal display to a recorder display at the time of a power source ON, and receives the input of each actuation SW ( drawing 4 (b)). At the time of a power source OFF, a liquid crystal display is switched to a clock display ( drawing 4 (a)), and the input of Actuation SW is not received. Moreover, slide SW11 serves as a hold facility. That is, when slide SW11 is turned ON during activation in sound recording, playback, a rapid traverse, and rewinding mode (i.e., when it is made a power source OFF), it continues the mode concerned and the input of Actuation SW is forbidden. Moreover, when it is made Hold ON during sound recording playback, a rapid traverse, and rewinding, the input of Actuation SW is not received until sound recording playback, a rapid traverse, and rewinding stop at a memory end. Moreover, when it stops at a memory end, it shifts to the condition of a power source OFF immediately. An actuation input is carried out once it makes it Hold OFF, in order to stop the mode after making it Hold ON. This is effective in the operation mistake prevention under mode activation.

[0028] In this example which changes the bit rate which changes a sound signal into digital data by the tone-quality mode switch SW, and switches sound recording time amount, the sound recording of 1 hour is possible for slide SW12 in the nature mode of bass in the nature mode of loud sound for 30 minutes.

[0029] It is SW which already heard that slide SW13 was a switch in voice starting mode, and made the switch in the mode serve a double purpose, and when it turns ON, during sound recording, a voice starting function is used, and only when voice input is more than predetermined level, it records. 1.5X high-speed playback is performed during playback.

[0030] If this SW18 is pushed during sound recording or a halt by the E mark (and - OBU letter) SW, SW18 will display E mark during several seconds on LCD63 ( drawing 4 (i)), and will update a letter. For example, when the E mark SW was pushed during sound recording or after sound recording termination and sound recording initiation of letter No.18 is carried out next, sound recording initiation of letter No.19 is carried out. When there are already the 19 numbers of letters, alarm pronunciation is carried out, E mark display (132) and the display (133) of a letter number are blinked for several seconds, and renewal of a letter is forbidden.

[0031] SW19 will perform I mark during several seconds to LCD63, if this SW19 is pushed during sound recording or a halt by the I mark (instruction mark) SW ( drawing 4 (j)), and it adds and records I mark on sound recording data. It becomes possible by recording I mark to carry out retrieval playback later. When I mark can be recorded to 99 pieces by all the whole letters and the 100th piece is recorded, only predetermined time indicates alarm pronunciation and the I mark display by flashing.

[0032] SW23 is the sound recording mode switch SW, and switches sound recording mode between a replace mode and insertion sound recording mode. Usually, when it is a replace mode and records in a replace mode from the letter middle, data [ finishing / sound recording / already ] are eliminated like a tape recorder, and new sound recording data are recorded. However, when it records to letter termination, it adds to letter termination, and records and the following letter does not eliminate. If SW23 is pushed, it will become insertion sound recording mode and will always display ( drawing 4 (c)). When insertion sound recording is carried out from the letter middle, sound recording data are inserted and recorded on the current position, and data [ finishing / sound recording ] are not eliminated. SW23 is toggle actuation and switches a replace mode and an insert mode. However, a power up is reset by the replace mode. Although the residual time in insertion sound recording mode which can be recorded is only a non-recorded capacity of memory, the residual time in a replace mode which can be recorded is decided from a non-recorded capacity of memory, and a recorded capacity from the current position to letter termination. For example, when carrying out overwrite sound recording in the nature mode of bass from the letter head recorded in the nature mode of loud sound for 10 minutes, the residual time which can be recorded is added for 20 minutes.

[0033] SW24 is for eliminating the part of the arbitration of recorded data by the partial elimination SW. If an operator moves the current position to the head or termination of a part to eliminate among playback and FF-REW first using one of the actuation SW and SW24 is pushed, he will blink the "ERASE" display ( drawing 5 (a)) and LED64 of LCD63, and will memorize an elimination starting position. Next, an

operator moves till a place to eliminate among playback and FF-REW using one of the actuation SW. Flashing of the "ERASE" display of LCD63 and flashing of LED64 are continued between this migration. After migration, if an operator pushes SW24 again, the "ERASE" display and LED64 of LCD63 will be shortly turned on for several seconds, and the recorded data of the part set up after several seconds are eliminated. The range to set up may be the back from before sound recording time amount, and may be a front from after. Moreover, two or more letters may be straddled. When the letter which the incorrect elimination prevention protection later mentioned to set-up elimination within the limits has required exists, alarm pronunciation is carried out, a protection display ( drawing 5 (c)) and LED64 are blinked for several seconds to this pronunciation and coincidence, and only the part which protection has not required is eliminated.

[0034] That is, if the elimination range is set up and SW24 is pushed on the 2nd times, the "ERASE" display and LED64 of LCD63 will be turned on for several seconds, but if the reset SW26 which suspends elimination and is mentioned later in the meantime is pushed or a power source SW11 is turned OFF, elimination will be taken and erased in the meantime. This is effective in the incorrect elimination prevention by the operation mistake. Moreover, the actuation input of those other than reset SW26 and power-source SW11 is not received during an elimination hold. Although a partial elimination starting position and a termination location are taken by reset SW26, it erases in this example and partial washout mode is reset, only an elimination termination location may be eliminated by reset SW26, and you may return to the display under partial elimination setup. If under [ 24 ] a partial elimination setup (i.e., SW) is pushed once, an elimination starting position is set up and reset SW26 is pushed during migration among playback and FF-REW using one of the actuation SW, a setup will be taken and erased and partial washout mode will be canceled. A setup is taken and erased, when the power source was turned OFF during the setup, or when sound recording is performed (when it is made Hold ON).

[0035] Moreover, when the set-up elimination range straddles two or more letters, in this example, elimination processing is carried out for every letter, and E mark which is the break of a letter does not eliminate. When the one whole letter is eliminated, it eliminates per letter, and the letter number of subsequent letters is packed. Although elimination processing is carried out for every letter, when straddling two or more letters, E mark in the range is eliminated and you may make it tie a letter to one in this example.

[0036] SW25 is the whole letter elimination SW, once it pushes, will perform an elimination display ( drawing 5 (a)), i.e., the "ERASE" display of LCD63, and will turn on LED64. If SW25 is canceled at this time, after switching on the light for several seconds, the letter of the current position is eliminated per letter. if SW25 is pushed first and it continues pushing for several seconds after an elimination display ( drawing 5 (a)) and lighting of LED64 -- the whole letter elimination display ( drawing 5 R> 5 (b)) -- becoming -- further -- the whole memory is eliminated after several seconds. When reset SW26 or a power source SW (SW11) is turned off during the elimination hold for several seconds, elimination is canceled or the actuation input of those other than Reset SW (SW26) and a power source SW (SW11) is not received during an elimination hold. When the incorrect elimination prevention protection later mentioned on the set-up letter has started, alarm pronunciation is carried out and it does not eliminate. When a whole elimination setup is carried out and there is a letter which has required protection, the letter number after the eliminated letter which eliminates only the letter which carries out alarm pronunciation and has not required protection is packed.

[0037] Although it displays [ elimination ] and ( drawing 5 (a)) displays [ LED ], and it is made to perform elimination after carrying out an elimination hold, and erasing a display after several seconds since it has set to this example and the completion of elimination also of the elimination of a gap is carried out within 1 second When elimination executive operation time amount becomes long by the case where the elimination range is large, the case where there are many letters, etc., the display may be indicated by flashing a different period during elimination processing activation.

[0038] SW26 will take and erase elimination, if this SW is pushed during an elimination hold of partial elimination (SW24) and the whole letter elimination (SW25) mentioned above in Reset SW (under an elimination display and LED lighting). Moreover, if this SW is pushed while pushing the partial elimination SW (SW24) once and having set up the elimination range, a setup of partial elimination will be reset.

[0039] Moreover, if coincidence push of SW23 (sound recording mode SW) and SW24 (partial elimination SW) is carried out, a protection display ( drawing 5 R> 5 (c)) will be performed for several seconds,

applying incorrect elimination prevention protection to a current position letter. Protection information is recorded on solid-state memory 66 with sound recording data. When protection has started the letter of the current position, the "P" mark of void is always displayed ( drawing 4 (d), drawing 4 (j)). If coincidence push of SW23 and SW24 is again carried out by the letter which has required protection, protection will be removed, the "P" mark of the void of a display will be erased, and the protection information currently recorded on sound recording data is eliminated. As mentioned above, when elimination actuation is performed to the letter which has required incorrect elimination prevention protection, alarm pronunciation is carried out and it does not eliminate by blinking a protection display ( drawing 5 (c)).

[0040] Once it pushes SW27 to sound recording SW, it will record by sound recording displaying and ( drawing 4 (f) ) LED switching on the light. The sound signal inputted from the external microphone attached in the built-in microphone 51 or the microphone jack 16 is changed into digital data, and is recorded on solid-state memory 66 with various kinds of management information and additional signals (sound recording time information, E mark, I mark signal, etc.). It records, while only the same time amount as the voice data newly recorded in the voice data already recorded in overwrite sound recording mode according to the sound recording mode set up by SW23 eliminates. In insertion sound recording mode, data [ finishing / sound recording ] carry out insertion sound recording of the data newly recorded without eliminating in a sound recording starting position. When sound recording initiation is carried out in overwrite sound recording mode at the letter which has required incorrect elimination prevention protection, alarm pronunciation is carried out, protection display ( drawing 5 (c) ) flashing is carried out, and sound recording is forbidden. However, when there are no data to eliminate at the letter or the letter last edge where a sound recording starting position is new, it records irrespective of the existence of protection.

[0041] When the remaining capacity of solid-state memory 66 becomes 90 or less seconds, alarm pronunciation is carried out every 15 seconds, and the display (37 of drawing 3 ) of residual time is blinked. When the remaining capacity of memory is lost, alarm pronunciation is carried out and sound recording termination is carried out ( drawing 5 (i) ). It stops by Halt SW (SW28) or Playback SW (SW29) to carry out sound recording termination. When [ which turned ON Hold SW (SW11) during sound recording ] a case, i.e., power-source OFF, is carried out, sound recording is continued, and it is made not to receive an actuation input. SW28 stops sound recording, playback, and FF-REW by Halt SW. An indication under halt is given to no displaying ( drawing 4 (b) ) according to sound recording mode at the time of overwrite sound recording mode, and an insertion display ( drawing 4 (c) ) is performed at the time of insertion sound recording mode. In a idle state, when there is no actuation input for several minutes, it shifts to a standby condition, and a power source is turned off ( drawing 4 (a) ). When there is which actuation input in the state of standby, standby is canceled and it shifts to a mode of operation.

[0042] SW29 will be reproduced if SW29 is pushed by Playback SW ( drawing 4 (d) ). At this time, it is already heard, and when the slide SW (SW13) for playback modes already hears it and is on the mode side, a playback display ( drawing 4 (e) ) is performed and it reproduces by already hearing it and the usual 1.5 time \*\* already hearing it. When playback termination of the one letter is carried out, a letter is reproduced next succeedingly. If a letter switches, alarm pronunciation will be carried out and the sound recording time of the following letter will be displayed for several seconds ( drawing 5 (d) ). If it becomes the letter end of the last letter, alarm pronunciation will be carried out, and it will display, and playback ( drawing 5 (h) ) will be ended. When it is detected that I mark signal is recorded into sound recording data during playback, I mark display ( drawing 4 (j) ) is blinked for several seconds. When FFSW31 is pushed during playback, it skips to the next letter head. The sound recording time of the following letter is displayed for several seconds, and playback initiation is carried out from a letter head. When REWSW30 is pushed similarly, playback is performed from the letter head in front of [ of the letter under current playback ] one. Nothing is done, when FFSW31 is pushed during the last letter playback, or when REWSW30 is pushed during playback from a head letter. When it is made a power source OFF when hold SW11 is turned ON during playback namely, playback is continued and an actuation input is not received.

[0043] SW30 is REWSW, if SW30 is pushed from a idle state, will perform a rewinding display ( drawing 4 (h) ), and will rewind it before the current position. A rewinding rate is processed by sound recording time amount irrespective of actual memory space. Namely, although twice as many memory space as the

nature mode of bass is used in the nature mode of loud sound, a rewinding rate is performed at the same rate. It rewinds by 3X for [ of REW initiation ] several seconds. That is, the sound recording data for 3 seconds are rewound in 1 second. It accelerates every several seconds after that up to 6X, 12X, 24X, 48X, and 96X. Rewinding termination will be carried out if it comes at the head of a current letter during rewinding. When REW initiation is carried out from a letter head, it switches to the letter in front of one, and rewinding activation is carried out from the letter termination of a front letter. If it becomes the letter head of a head letter, alarm pronunciation will be carried out and rewinding prohibition will be carried out. There is no voice output during rewinding activation.

[0044] If SW31 is pushed from a idle state by FFSW, SW31 will perform a rapid-traverse display ( drawing 4 (g) ), and will fast forward it after the current position. It accelerates and fast forwards from 3X to 96X every several seconds like REWSW, and if letter termination is reached, rapid-traverse termination will be carried out. When FF initiation is carried out from letter termination, rapid-traverse initiation is carried out from the next letter head. When the termination of the last letter is reached, alarm pronunciation is carried out, and it displays ( drawing 5 R> 5 (h) ), and a rapid traverse is forbidden. When [ which turned ON Hold SW (SW11) into FF-REW ] a case, i.e., power-source OFF, is carried out, it continues FF-REW and an actuation input is not received. A power source is turned off after FF-REW termination.

[0045] Below, elimination actuation of this example is explained with reference to the flow chart of drawing 7 . S shall express a step with the following flow charts. When an operator eliminates voice data [ finishing / record ], the 1st operating member SW24, i.e., partial elimination, and the data range eliminated among playbacks SW29, REWSW30, and FFSW31 using one of the actuation SW are set up first (S101). If the elimination range is decided, by LCD63, an elimination display will be performed (S102) and an operator will be notified of elimination activation. Next, activation of elimination processing is postponed until the time amount which set the time amount for several seconds as the timer (S103), and was set as the timer passes (i.e., until it becomes time over) (S106). And when it judges whether the 2nd operating member SW11, i.e., a power source, or reset SW26 was operated in the meantime (S104, S105) and one of SW(s) is operated, an elimination display is erased by display reset of S109, and elimination activation is canceled. Moreover, when there is no input of the 2nd operating member in until time exaggerated, a display is reset by display reset of S107, and elimination processing is performed (S108).

[0046] Drawing 8 is a flow chart which shows the main routine after the system reset of the solid-state memory recorded message sender for telephone of this example. After resetting an internal circuitry by the system reset, when ON of the clock adjustment SW (not shown) is detected first (S201) and this SW is pushed, a clock display ( drawing 4 (a) ) is performed and an internal clock is adjusted (S202). This is because it is indicated by the clock in the state of power-source OFF and clock adjustment is enabled also in the state of power-source OFF. Next, if ON of a power source SW11 is detected (S203) and the power source SW11 is turned on, it will judge whether there is any SW input (S204). Mode processing is mentioned later and carried out according to SW inputted when there was a SW input (S205). Next, various kinds of idle states after mode processing activation are displayed (S206). In a idle state, the display in the letter number of the current position, the time amount from a letter head, the residual time that can be recorded, and sound recording mode is performed ( drawing 4 (b), (c) ). Moreover, the inside of a partial elimination entry performs an elimination display ( drawing 5 (a) ). Next, a flashing display is processed (S207). In a idle state, the elimination display under flashing of a cell alarm display when cell voltage becomes below predetermined level, and partial elimination setup is blinked.

[0047] On the other hand, when there is no SW input S204, a standby count is performed (S208), and when there is no SW input beyond count termination, i.e., predetermined time, it shifts to power-source off-mode (S209). Moreover, also when a power source SW11 is OFF in S203, it shifts to power-source off-mode (S209), and a display is switched to a clock display ( drawing 4 (a) ), the power is turned off, and it shifts to a standby mode (S210). Although a recorded message sender for telephone is turned off by S210, the clock function and the clock display function are moving. A standby mode is canceled by the actuation input of one of SW(s), and returns after [ S201 ] powering on.

[0048] Drawing 9 and drawing 10 are flow charts which show the detailed actuation of mode processing of S205 shown in drawing 8 . First, when sound recording SW27 is ON in S211, it moves to sound recording mode (S212). Next, when playback SW29 is ON in S213, it moves to a playback mode (S214). Next, when FFSW31 is ON in S215, it moves and (S216) fast forwards in FF mode. The detail in in the above-mentioned sound recording mode, playback mode, and FF mode is mentioned later.



[0049] Next, when REWSW30 is ON in S217, it moves and (S218) rewinds in REW mode. Next, when the E mark SW18 turns on by S219, while progressing to S220 and updating a letter, E mark is displayed for several seconds ( drawing 4 (i)). However, when the current position is not the letter termination of the last letter, it does not update (it does not display). Moreover, when the number of letters exceeds 19, a display ( drawing 4 (i)) is blinked for several seconds, without updating, and alarm pronunciation is performed.

[0050] Moreover, when the I mark SW19 is ON in the following S221, addition record of the I mark signal is carried out by I mark addition record of S222 at the recorded voice data of the current position, and I mark is displayed on coincidence for several seconds ( drawing 4 (j)).

[0051] Next, when the sound recording mode SW23 is ON in S223, it progresses to S224 and judges whether they are the partial elimination SW24 and coincidence push, and when it is not coincidence push, it progresses to S225 and sound recording mode is switched. That is, when the present sound recording mode is a replace mode ( drawing 4 (b)), it switches and displays on an insert mode ( drawing 4 (c)), and when the present sound recording mode is an insert mode, it indicates by change-over at a replace mode. Moreover, when the sound recording mode SW and the partial elimination SW are judged by S224 to be coincidence push, a setup of partial elimination is canceled first (an elimination display is canceled), and incorrect elimination prevention protection processing is performed by protection processing of S229.

[0052] Moreover, when the partial elimination SW24 is ON in S226, it progresses to S227 and judges whether they are the sound recording mode SW23 and coincidence push, and when it is not coincidence push, it progresses to S228 and partial elimination processing is performed. The detail of partial elimination is mentioned later. Moreover, when the partial elimination SW and the sound recording mode SW are coincidence push in S227, after switching sound recording mode again first, it progresses to protection processing of S229, and incorrect elimination prevention protection processing is performed. In S229, when incorrect elimination prevention protection has not started the letter of the current position, addition record is carried out at voice data, protecting. A protection display ( drawing 5 (c)) is performed to coincidence for several seconds. Moreover, when protection has already started the letter of the current position, the protection information by which removes protection and addition record is carried out at voice data is eliminated.

[0053] Moreover, when the whole letter elimination SW25 is ON in S230, the whole letter elimination processing is performed by S231. The detail of the whole letter elimination is mentioned later. Next, when reset SW26 is ON in S232, a partial elimination entry is canceled by elimination reset of S233, and an elimination display is erased.

[0054] Drawing 11 and drawing 12 are flow charts which show detailed actuation in the sound recording mode of S212 of drawing 9. First, in S301, sound recording mode is displayed "REC" ( drawing 4 R> 4 (f)), and LED64 is turned on to coincidence. Next, an alarm is pronounced, while progressing to S322 and displaying ( drawing 5 (i)), when there is no remaining memory space which can be recorded by S302. And a display is blinked during the pronunciation of an alarm. When it is going to progress to decision whether there is any protection of S303 when it remains by S302 and there is memory space, and it is going to carry out sound recording initiation in a replace mode from the letter middle, it judges [ whether incorrect elimination prevention protection has started the letter of the current position, and ], if protection has started, it will progress to S321, and a protection display ( drawing 5 (c)) is indicated by flashing, and a protection alarm is pronounced.

[0055] Moreover, when protection has not started by S303, it progresses to S304 and records one frame at a time. In this example, it is changed in the nature mode of loud sound every 24msec(s), it is changed into 12 bytes of digital data in 24 bytes and the nature mode of bass, and a sound signal is recorded on solid-state memory 66. After sound recording record is carried out, the end display and end alarm which progressed to S322 when the remaining memory space which can be recorded by S305 was lost, and were mentioned above are performed. Moreover, when it remains by S305 and there is capacity, it progresses to S306, and it judges whether it is ON, and in ON (i.e., the case of a power source SWOFF), hold SW11 flies to S318, and performs a sound recording display. When hold SW11 is OFF in S306, it judges whether it progresses to S307 and there is any SW input. That is, halt SW28 and playback SW29 are detected, and when there is one of SW inputs, sound recording termination is carried out.

[0056] When there is no SW input S307, the E mark SW18 judges whether it is ON by S308, and renewal

of a letter of the case of ON is carried out by S309. The conditions which carry out renewal of a letter are as having mentioned above. That is, when E mark during several seconds is displayed ( drawing 4 R> 4 (i)) and 19 is counted with the number of letters, it indicates by flashing and renewal of a letter is not performed. It only displays and the count of display flashing time amount is performed by S318 and S320 which are mentioned later S309. When the E mark SW18 is OFF in S308, the I mark SW19 judges whether it is ON by S310, in ON, addition record of the I mark signal is carried out by S311 at voice data, and it performs I mark display ( drawing 4 (j)).

[0057] Moreover, in ON, when the I mark SW19 is OFF in S310, the sound recording mode SW23 judges whether it is ON by S312, and it progresses to S313 and judges whether they are the partial elimination SW24 and coincidence push, and when there is nothing at coincidence push, sound recording mode is switched by S314. Moreover, in the coincidence push by S313, it progresses to protection processing of S317, and it performs incorrect elimination prevention protection processing.

[0058] Moreover, when the sound recording mode SW23 is OFF in S312, the partial elimination SW24 judges whether it is ON by S315, in ON, it judges whether they are the sound recording mode SW23 and coincidence push by S316, and in coincidence push, after switching sound recording mode again, it progresses to protection processing of S317, and it performs incorrect elimination prevention protection processing. Moreover, when incorrect elimination prevention protection has not started the letter of the current position, a protection display ( drawing 5 (c)) is performed and addition record of the protection information is carried out at voice data. When protection has already started, protection information [ finishing / record ] is eliminated. Elimination actuation is not performed in sound recording mode.

[0059] Moreover, when the partial elimination SW24 is OFF in S315, regeneration of the letter number of the current position, the sound recording time amount from a letter head, and the residual time that can be recorded is carried out by the sound recording display of S318. Moreover, the display time of the contents displayed by S309, S311, and S317 is counted, and it returns after predetermined time at the original record display ( drawing 4 (f)).

[0060] Next, a flashing display is processed by S320. E mark display ( drawing 4 (i)) when the number of letters exceeds 19 by the alarm display ( drawing 5 (f)) of cell voltage and S309 carries out flashing processing in sound recording mode.

[0061] Drawing 13 and drawing 14 are flow charts which show detailed actuation of the playback mode of S214 of drawing 9. First, in S401, a playback mode is displayed according to the reproduction speed set up with reproduction speed SW ( drawing 4 (d), (e)). "PLAY" Next, when the current position is a memory end in S402 (i.e., when [ the case where it is the letter termination of the last letter, and when there are no sound recording data (all memory elimination conditions) ]), it progresses to S409, it displays ( drawing 5 (h)), and an alarm is pronounced. By S402, memory and when not coming out, the current position judges whether it is a letter head S403, in the case of a letter head, it progresses to S406, and it displays the sound recording time of the present letter ( drawing 5 (d)).

[0062] Moreover, when it is not a letter head in S403, the current position judges whether it is letter termination by S404, and in the case of letter termination, the following hotel stationery is performed by S405. That is, it sets at the tip of a letter of the following letter number, and sound recording time is displayed (S406).

[0063] Next, voice playback is performed by S407. Usually, by playback of a rate, every 24msec(s), it is already heard, and by the playback mode, the digital data for one frame is read from solid-state memory 66 every 16msec(s), and it changes and outputs to a sound signal. Next, it judges whether it is a memory end by S408, and, in the case of a memory end, progresses to S409, it displays ( drawing 5 (h)), and an alarm is pronounced. Moreover, when judging whether it reproduced to letter termination by S410 memory and when not coming out and not reproducing to a letter tip by S408, it progresses to S414, and when it reproduces to letter termination, the following hotel stationery is performed by S411. That is, it sets to the letter head of the following letter number, and the time in which the letter was recorded is displayed (S412). And in the following S413, the letter alarm for notifying of the letter having switched during playback is pronounced.

[0064] Next, hold SW11 judges whether it is ON by S414, in ON, it progresses to S434, and it performs a playback display. Moreover, when hold SW11 is OFF in S414, whether there being any switch input by S415 and halt SW28 SW27, i.e., sound recording, judge whether it is ON, and it carries out playback termination of the time of ON.



[0065] Moreover, when there is no switch input S415, it progresses to S416 and FFSW31 judges whether it is ON, and when FFSW31 is ON, the following hotel stationery is performed by S417. That is, it skips to the following letter, sets to a letter head, sound recording time is displayed (S( drawing 5 (d)) 420), and the letter alarm in which it is shown that the letter switched is pronounced (S421). It progresses to S418 without doing anything, when FFSW31 is OFF in S416 here. In S418, REWSW30 judges whether it is ON and performs front hotel stationery S419 at the time of ON. That is, it sets to the letter head of the letter in front of [ of a current position letter ] one, sound recording time is displayed, and a letter alarm is pronounced (420 S 421).

[0066] Moreover, when REWSW30 is OFF in S418, the sound recording mode SW23 judges whether it is ON by S422, it progresses to S423 at the time of ON, and it judges whether they are the partial elimination SW24 and coincidence push. In the coincidence push by here, after canceling a partial elimination setup by protection processing of S426, incorrect elimination prevention protection is processed. Moreover, when the sound recording mode SW23 is OFF in S422, the partial elimination SW24 judges whether it is ON by S424, it progresses to S425 at the time of ON, and it judges whether they are the sound recording mode switch SW(sound recording mode SW) 23 and coincidence push, in coincidence push, it progresses to protection processing of S426, and it processes incorrect elimination prevention protection. When protection has not started a current position letter here, a protection display ( drawing 5 (c)) is performed and addition record of the protection information is carried out at voice data. When protection has already started, protection information [ finishing / record ] is eliminated. Moreover, when it is not coincidence push in S425, it progresses to S427 and partial elimination is performed. The detail of partial elimination is mentioned later. A change in sound recording mode is not made during playback.

[0067] Moreover, when the partial elimination SW24 is OFF in S424, the whole letter elimination SW25 judges whether it is ON by S428, and the whole letter elimination is performed by S429 at the time of ON. The detail of the whole letter elimination is mentioned later. Moreover, when the whole letter elimination SW25 is OFF in S428, reset SW26 judges whether it is ON by S430, a partial elimination setup is canceled by elimination reset of S431 at the time of ON, and it stops elimination display flashing.

[0068] Moreover, when reset SW26 is OFF in S430, the I mark SW19 judges whether it is ON by S432, addition record of the I mark signal is carried out at the time of ON, and it displays I mark on the voice data of the frame reproduced by I mark addition record of S433 ( drawing 4 (j)). Moreover, when the I mark SW19 is OFF in S432, regeneration of the letter number of the current position, the time amount from a letter head, and the residual time that can be recorded is carried out by the playback display of S434. However, when sound recording time is displayed by S406, S412, and S420, it does not indicate by predetermined time. Moreover, when it indicates by protection by the time of displaying sound recording time by S406, S412, and S420, and S426, when it indicates by I mark by S433, display time is counted, and it returns after predetermined time at the original display ( drawing 4 (d), (e)). However, the inside of a partial elimination entry blinks an elimination display ( drawing 5 (a)).

[0069] A flashing display is performed in the following S435. The flashing display under playback performs the alarm display ( drawing 5 R> 5 (f)) when cell voltage falling, and the elimination display under partial elimination setup ( drawing 5 (a)). Moreover, when addition record of the I mark signal mentioned above in the voice data of the reproduced frame is carried out, only predetermined time indicates the I mark display ( drawing 4 (j)) by flashing.

[0070] Drawing 15 and drawing 16 are detail flowcharts which show actuation in FF mode of S216 of drawing 9. First, FF mode is displayed by S501 "FF" ( drawing 4 (g)). Next, in decision of being the memory end of 502, it judges whether the current position has the letter termination of the last letter, or recorded data, and progresses to S511 at the time of YES, it displays ( drawing 5 (h)), and an alarm is pronounced.

[0071] Moreover, by S502, memory and when not coming out, the current position judges whether it is a letter head S503, and in the case of a head, the time which recorded the current letter by S506 is displayed. On the other hand, when it is not a letter head in S504, the current position judges whether it is letter termination by S504, and as for the case of letter termination, the following hotel stationery is performed by S505. That is, it sets to the next letter head and sound recording time is displayed (S506). Next, in S507, the timer for making FF rate quick for every predetermined time is set. In the following S508, whenever a timer measures 32msec(s), the current position is moved. That is, since need to rotate

a tape and it is not necessary to fast forward it like the recorded message sender for telephone using a magnetic tape in this recorded message sender for telephone, the address of the solid-state memory 66 which recorded voice data for every predetermined time is predetermined-time[ every ]-updated (S509). [0072] Next, when it judges whether the current position reached the letter termination of the last letter and reaches in decision of being the memory end of S510, it progresses to S511, and displays ( drawing 5 (h)), and an alarm is pronounced. Moreover, by S510, memory and when not coming out, it judges whether the current position reached letter termination S512, and FF actuation is ended when letter termination is reached.

[0073] Moreover, when it is not letter termination in S512, FF rate rise timer set by S507 is counted, and FF rate is made quick for every predetermined time (513 S 514). At this example, it fast forwards by 3X for [ of the beginning ] 3 seconds. That is, the voice data for 96msec(s) is fast forwarded every 32msec (s). In this example, since the sound signal is digitized every one-frame 24msec(s), the voice data for 96msec(s) is equivalent to the voice data for four frames. If 3 seconds pass from rapid-traverse initiation, FF rate will be set to 6X and 15 seconds will be set to FF rate rise timer. It accelerates every 1.5 seconds henceforth up to 12 times as many → [ as this ] 24 times as many → [ as this ] 48 times as many → [ as this ] 96 times.

[0074] Next, in the present position indication of S515, the time amount and the residual time which can be recorded from a letter tip of the current position which carried out renewal of a rapid traverse are displayed. A flashing display is processed in S516. The flashing display in FF mode is only cell warning when cell voltage becomes below predetermined level. In S517, hold SW11 judges whether it is ON, and it flies to S508 at the time of ON, i.e., when a power source SW is OFF. When hold SW11 is OFF in S517, it judges whether there is any SW input of S518. And in with SW input (i.e., when sound recording SW27, halt SW28, playback SW29, REWSW30, partial elimination SW24, and the whole letter elimination SW25 are pushed in FF mode), a rapid traverse is stopped.

[0075] As mentioned above, although the actuation at the time of FF mode was explained, the detail of the actuation at the time of REW mode is the same as that of the actuation at the time of FF mode. Drawing 17 and 18 are flow charts which show detailed actuation of S228 of drawing 10 , and the partial washout mode of S427 of drawing 13 . First, in S601, it ends without doing anything, when there are no data [ finishing / sound recording ]. Next, the setting initiation or setting termination of partial elimination whether it is the 1st actuation input by the partial elimination SW24 is judged by S602. In the 1st actuation input, it progresses to S615 here, the current position is memorized, and flashing of the "ERASE" display ( drawing 5 (a)) and LED24 of LCD23 is set up and started by elimination display flashing setup of S616. Moreover, when are judged with it being the 2nd actuation input in S602, and the partial elimination range is decided, it judges with setting termination of partial elimination. Next, it judges whether there is any elimination section by S603. That is, it judges whether the current position is the same as the elimination starting position memorized by S615. Since there is no voice data to eliminate when the same, this mode is ended.

[0076] Moreover, when the elimination starting position and the current position which were memorized by S603 S615 are not the same (i.e., when the elimination data range is set up and it is judged as those with the elimination section), it judges that they are those with protection by S604. That is, it judges whether incorrect elimination prevention protection has started altogether the voice data from an elimination starting position to the current position. When an elimination starting position and the current position are the same letters here, it judges whether protection has started the letter now. When protection of each letter and the protection information on all the letters inserted in between are detected and protection has started all data, in the case of a different letter, the incorrect elimination prevention protection display ( drawing 5 (c)) is indicated by predetermined time flashing by the protection display of S614, and it pronounces a protection alarm.

[0077] LED64 is also turned on, while progressing to the elimination display of S605 and continuing turning on the "ERASE" display ( drawing 5 (a)) of LCD63, when the data with which protection nothing, i.e., a part, has not required protection by S604 exist. Next, the timer delayed by the timer 3-second set of S606 for 3 seconds in elimination activation is set. That is, for 3 seconds waits for elimination activation in this example. And mode termination is carried out without carrying out elimination activation, when OFF SW, i.e., a hold, is turned on by the power source SW11 while [ 3 seconds ] waiting for elimination activation, or (S607) reset SW26 is turned on (S608).

[0078] On the other hand, while the power source SW11 has been ON, when there is no input of reset SW26, a flashing display is processed (S609), and it waits for 3 seconds (S610). The flashing display of S609 is only an alarm display of cell voltage. If 3 seconds is counted by S610, an elimination display and LED will be erased by display reset of S611, and partial elimination will be performed (S612). Partial elimination eliminates all the voice data that has not required the incorrect elimination prevention protection from an elimination starting position to the current position. Next, it judges whether they are those with protection by S613. That is, when the voice data of a letter with which the part has also required incorrect elimination prevention protection for the voice data from an elimination starting position to the current position is contained, it progresses to S614 and predetermined time flashing of the protection display ( drawing 5 (c) ) is carried out, and a protection alarm is pronounced.

[0079] Drawing 6 is drawing showing the situation of the above-mentioned partial elimination. Since an elimination starting position is memorized and a display is blinked, if drawing 6 (a) performs 1st actuation first in the mid-position B point of a letter 1, it moves to the E mid-position of a letter 3 and 2nd actuation is performed by one actuation SW of playback and FF, and REW, after turning on a display for several seconds, the recorded data of a before [ from a B point / E points ] will be eliminated. Drawing 6 (b) shows the situation after elimination. As shown in this drawing, a letter 1 is eliminated from a B point to C point, and after elimination becomes only a B point from an A point. Moreover, the whole letter is eliminated and a letter 2 is lost. A letter 3 gets one number blocked, it becomes a letter 2, and from E points to F points remain. When a B point is set up first and then E points are set up, the current position after elimination is set to the head of E points, i.e., a letter. When E points are set up first and then a B point is set up, the current position after elimination is set to a B point, i.e., the last edge of a letter 1. Moreover, when incorrect elimination prevention protection has started the letter 2 ( drawing 6 (c) ), partial elimination of a letter 1 and the letter 3 is carried out, respectively, and a letter 2 remains, without being eliminated ( drawing 6 (d) ).

[0080] Drawing 19 and 20 are flow charts which show detailed actuation of S231 of drawing 10 , and the whole letter washout mode of S429 of drawing 14 . First, in S701, it ends without carrying out [ any ] whether there are any data [ finishing / sound recording ], when it judges and there are no data. Next, in decision of being those of S702 with protection, whether incorrect elimination prevention protection has started the letter of the current position, and when it judges and protection has started, it progresses to S721 and predetermined time flashing of the protection display ( drawing 5 (c) ) is carried out, and a protection alarm is pronounced and it ends.

[0081] On the other hand, when protection has not started a protection nothing, i.e., the current position, letter by decision of S702, an elimination display ( drawing 5 (a) ) and LED64 are turned on by S703. Next, in flag reset of S704, in order [ whole ] to judge whether whole elimination is performed with SW flag for judging that it was continued for 3 seconds whether pushing elimination SW25, an elimination flag is reset. By the timer 3-second set of S705, the 3-second timer which becomes a timer for switching to whole elimination by continuing pushing elimination SW25 for 3 seconds and a timer for elimination activation being delayed for 3 seconds is set. and the hold SW when a power source SW11 is turned off during a timer count -- ON -- becoming (S706) -- when reset SW26 is turned on (S707), elimination activation is stopped, and the mode is ended.

[0082] Moreover, it judges whether the whole letter elimination SW25 was turned off by S708 during the timer count, and, in ON, progresses to S710, and when turned off, SW flag is set by S709. A flashing display is processed in S710. Only flashing ( drawing 5 (f) ) of cell warning when cell voltage is low blinks here.

[0083] And it judges whether 3 seconds passed in S711, and if 3 seconds pass, it will judge whether it progresses to S712 and the whole elimination flag is set. Since the whole elimination flag is not set at first, it progresses to S713, and it judges whether SW flag is set. And when the whole letter elimination SW25 is turned off in [ of the beginning ] 3 seconds, after [ when SW flag is set, namely, ] progressing to display reset of S716 and turning OFF an elimination display, the letter of the current position is eliminated by S717. Moreover, when SW flag is not set by S713, when the whole letter elimination SW25 is continuing being pushed for [ of the beginning ] 3 seconds, it progresses to S714 and a whole elimination flag is set, whole elimination is displayed by S715 ( drawing 5 (b) ), it returns to S705, and elimination activation is delayed for 3 more seconds.

[0084] A power source SW11 is not turned off in these 3 seconds, but on the other hand, when reset

SW26 does not turn on, it progresses to S712, and it judges again whether the whole elimination flag is set. Whole elimination is performed, after progressing to elimination display reset of S718 and erasing an elimination display shortly, since the whole elimination flag is set (S719). All the letters that protection has not required are eliminated in whole elimination. At this time, it judges that they are those with protection by S720, when the letter which has required at least one protection exists, it progresses to S721 and a protection display ( drawing 5 (c)) is blinked for several seconds, and a protection alarm is pronounced.

[0085] Thus, after elimination by whole this example waits for 3 more seconds after continuing pushing elimination SW25 for [ of the beginning ] 3 seconds and indicating whole elimination, it performs. All elimination is stopped, when a power source SW11 is turned OFF between them or reset SW26 is turned ON.

[0086] In addition, when there is the need for a display, a flashing indication of S207 of drawing 8 , S320 of drawing 12 , S435 of drawing 14 , S516 of drawing 16 , S609 of drawing 18 , and the flashing display process of S710 of drawing 19 is given only during a setup of the time of cell voltage becoming below predetermined level, or partial elimination. When there is no need for a display (i.e., when omitting a setup of the time when cell voltage is high enough, or partial elimination), neither of the processings is performed.

[0087] In case the data of a request of sound recording data [ finishing / sound recording ] are eliminated according to the above-mentioned example, since activation of elimination processing can be canceled by delaying activation of predetermined time elimination processing after decision of an elimination actuation input, and turning on Reset SW in the meantime, or carrying out a power source SW to OFF, it becomes possible to prevent incorrect elimination by the operation mistake. Moreover, since elimination is automatically performed when the above-mentioned actuation is not made in predetermined time, the operability of a recorded message sender for telephone is not spoiled.

[0088] Moreover, since a display performs a different display from the display by which it is indicated by predetermined time after a setup of the elimination range while setting up the elimination range of the voice data recorded on solid-state memory, an operator can distinguish easily the setting period of the elimination range, and the delay period of elimination activation.

[0089] Moreover, since the combination of luminescence and an alphabetic character was made to perform the display about elimination activation, an operator can make smaller possibility of overlooking the setting period of the elimination range, or the delay period of elimination activation.

[0090] As described above, the voice data processor of this example A voice data record means to record on the solid-state memory 66 which can rewrite the sound signal changed into the digital data (CPU65). An elimination means (the partial elimination SW24, the whole letter elimination SW25) to eliminate the voice data recorded on solid-state memory 66. The 1st actuation means for setting up the elimination range of the voice data recorded on solid-state memory 66 (the partial elimination SW24 and playbacks SW29, REWSW30, and FFSW31). A delay means to delay predetermined time (for 3 seconds) elimination activation after a setup of the elimination range (CPU65). The above-mentioned predetermined time and a display means to display the predetermined information (the "ERASE" display of LCD63, and lighting display of LED64) about elimination activation (LCD63, LED64). The 2nd actuation means for canceling elimination activation (reset SW26 or power source SW11). Elimination is not performed when the 2nd actuation means (reset SW26 or power source SW11) is operated during the above-mentioned display. When the 2nd actuation means is not operated during the above-mentioned display, the control means (CPU65) which performs elimination of voice data with an elimination means (the partial elimination SW24, letter elimination SW25) is provided.

[0091] Moreover, the above-mentioned display means (LCD63, LED64) performs a different display from the display by which the elimination range of the voice data recorded on solid-state memory 66 is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means. That is, the "ERASE" display and LED64 of LCD63 are blinked during a setup of the elimination range, and the predetermined time after an elimination entry performs the "ERASE" display of LCD63, and the lighting display of LED64. Thus, the display about elimination activation is performed by the combination of luminescence (luminescence of LED64), and an alphabetic character (ERASE).

[0092] Furthermore, the technical thought of the following configurations is drawn from the above-mentioned concrete example, and the following effectiveness is done so.

(1) A voice data record means to record on the solid-state memory which can rewrite the sound signal changed into the digital data, An elimination means to eliminate the voice data recorded on solid-state memory, and the 1st actuation means for setting up the elimination range of the voice data recorded on solid-state memory, A delay means to delay predetermined time elimination activation after a setup of the elimination range, and the above-mentioned predetermined time and a display means to display the predetermined information about elimination activation, The voice data processor possessing the control means which elimination is not performed when the 2nd actuation means is operated during the above-mentioned display with the 2nd actuation means for canceling elimination activation, but performs elimination of voice data with an elimination means when the 2nd actuation means is not operated during the above-mentioned display.

(2) For the display by which the elimination range of the voice data recorded on solid-state memory is indicated by predetermined time after a setup of the elimination range during a setup with the 1st actuation means, a display means is a voice data processor given in the configuration (1) which performs a different display.

(3) The display about elimination activation is a voice data processor the configuration (1) performed with the combination of luminescence and an alphabetic character, or given in (2).

[0093] According to the voice data processor given in the above-mentioned configuration (1), an operator can prevent eliminating recorded data by the operation mistake. Moreover, according to the voice data processor given in a configuration (2), in addition to the effectiveness of the voice data processor of a publication, an operator can distinguish now easily the setting period of the elimination range, and the delay period of elimination activation in a configuration (1).

[0094] Moreover, according to the voice data processor given in a configuration (3), possibility that an operator will overlook the setting period of the elimination range or the delay period of elimination activation in a configuration (1) or a configuration (2) in addition to the effectiveness of the voice data processor of a publication can be made smaller.

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[Translation done.]

**\* NOTICES \***

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1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

3.In the drawings, any words are not translated.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

**[Drawing 1]** It is drawing showing the configuration of the solid-state memory recorded message sender for telephone with which this invention is applied.

**[Drawing 2]** (a) is the appearance side elevation of a solid-state memory recorded message sender for telephone, and (b) is the appearance perspective view of a solid-state memory recorded message sender for telephone.

**[Drawing 3]** It is the segment Fig. of a liquid crystal display.

**[Drawing 4]** (a) Or (j) is the segment Fig. of a liquid crystal display, and (a) shows the display at the time of a power source OFF. (b) shows the display at the time of the power source ON of a replace mode, and (c) shows the display at the time of the power source ON in insertion sound recording mode. The display under rapid traverse is shown, the display under rewinding is shown, the display under playback is shown and the display under I mark record is shown [ (d) / (e) / it is already heard, the display under playback is shown, and / (f) / the display under sound recording is shown and / (g) / (h) / (i) / the display under E mark record is shown and ] in (j).

**[Drawing 5]** (a) Or (i) is the segment Fig. of a liquid crystal display, and (a) shows the display under a partial elimination setup and partial elimination and letter elimination hold. (b) shows the display under whole elimination hold, and (c) is the display at the time of a setup of incorrect elimination prevention protection, and a protection alarm. (d) is the display of the sound recording time when reproducing a letter head, and (e) is the display of the power resource of a power up. (f) is a working dc-battery alarm display, (g) is the display at the time of the lock of operation by battery voltage fall, and (i) is [ (h) is a display when playback and a rapid traverse make a memory end, and ] a display when the memory remaining capacity is lost during sound recording.

**[Drawing 6]** (a) Or (d) is drawing showing the situation of partial elimination.

**[Drawing 7]** It is the flow chart which shows the procedure of elimination actuation.

**[Drawing 8]** It is the flow chart which shows the main routine after a system reset.

**[Drawing 9]** It is the flow chart which shows the anterior part of mode down stream processing in the flow chart of drawing 8 .

**[Drawing 10]** It is the flow chart which shows the posterior part of mode down stream processing in the flow chart of drawing 8 .

**[Drawing 11]** It is the flow chart which shows the anterior part of down stream processing in the sound recording mode in the flow chart of drawing 9 .

**[Drawing 12]** It is the flow chart which shows the posterior part of down stream processing in the sound recording mode in the flow chart of drawing 9 .

**[Drawing 13]** It is the flow chart which shows the anterior part of down stream processing of the playback mode in the flow chart of drawing 9 .

**[Drawing 14]** It is the flow chart which shows the posterior part of down stream processing of the playback mode in the flow chart of drawing 9 .

**[Drawing 15]** It is the flow chart which shows the anterior part of down stream processing in FF mode in the flow chart of drawing 9 .

**[Drawing 16]** It is the flow chart which shows the posterior part of down stream processing in FF mode in the flow chart of drawing 9 .

[Drawing 17] It is the flow chart which shows the anterior part of drawing 10 and the partial elimination process in the flow chart of drawing 13 .

[Drawing 18] It is the flow chart which shows the posterior part of drawing 10 and the partial elimination process in the flow chart of drawing 13 .

[Drawing 19] It is the flow chart which shows the anterior part of drawing 10 and the whole letter elimination process in the flow chart of drawing 14 .

[Drawing 20] It is the flow chart which shows the posterior part of drawing 10 and the whole letter elimination process in the flow chart of drawing 14 .

[Description of Notations]

11 thru/or 13 -- A slide switch, 14 -- Sound-volume volume, 15 -- Foot [ an earphone jack-cum-] remote control SW input jack, 16 -- A hand [ a microphone jack-cum-] remote control SW input jack, 18 -- E mark SW, 19 -- The I mark SW, 23 -- The sound recording mode switch SW, 24 -- Partial elimination SW, 25 -- The whole letter elimination SW, 26 -- Reset SW, 27 -- Sound recording SW, 28 [ -- FFSW, ] -- Halt SW, 29 -- Playback SW, 30 -- REWSW, 31 51 [ -- Output amplifier, ] -- A built-in microphone, 52 -- A built-in loudspeaker, 53 -- Input amplifier, 54 55 [ -- D/A converter, ] -- BPF, 56 -- An A/D converter, 57 -- LPF, 58 59 [ -- DSP, 63 / -- LCD (liquid crystal display section), 64 / -- LED, 65 / -- CPU, 66 / -- Solid-state memory, 67 / -- The actuation input section 68 / -- Power control section. ] -- CODEC, 60 -- A coding network, 61 -- A decryption circuit, 62

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[Translation done.]

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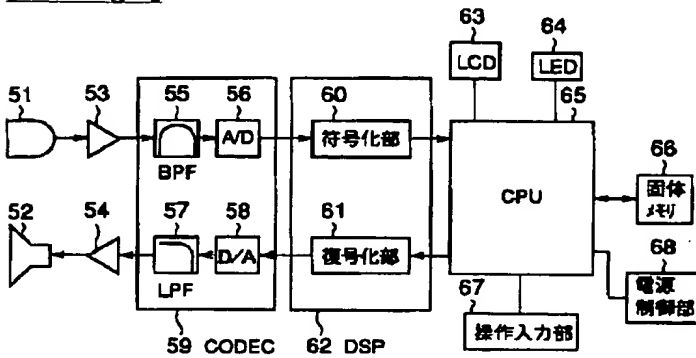
1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

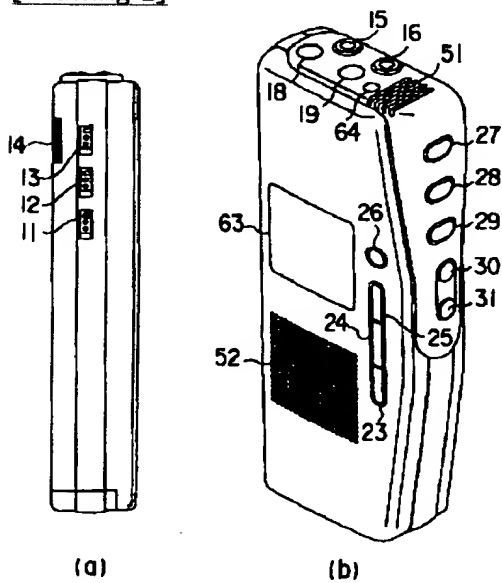
3.In the drawings, any words are not translated.

## DRAWINGS

[Drawing 1]

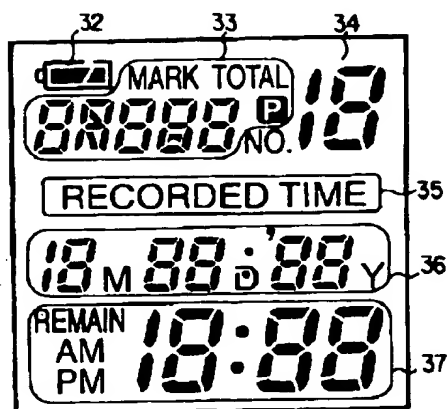


[Drawing 2]

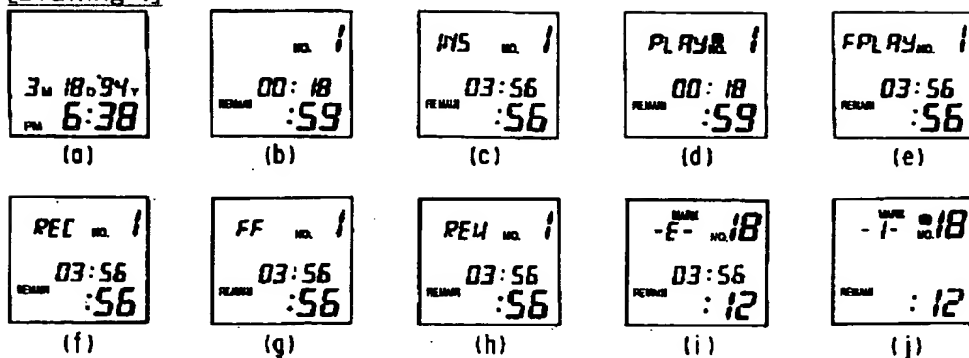


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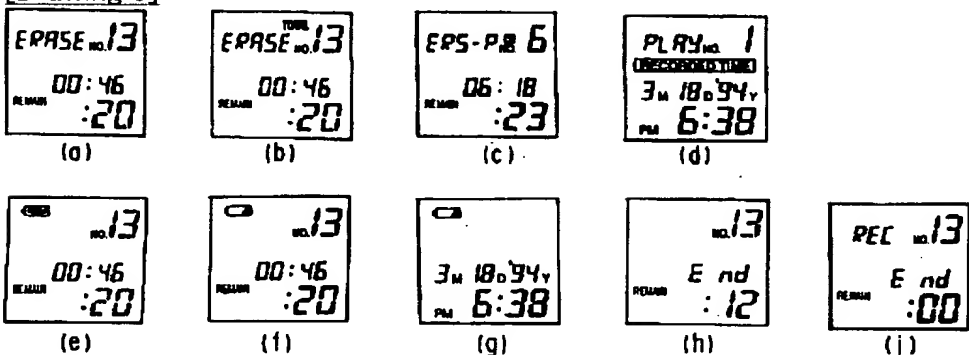




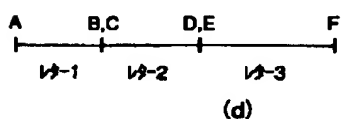
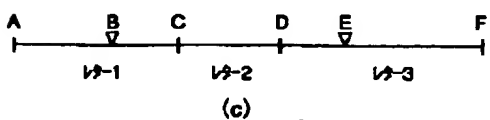
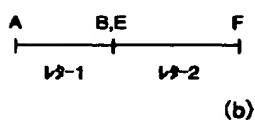
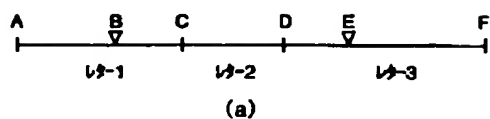
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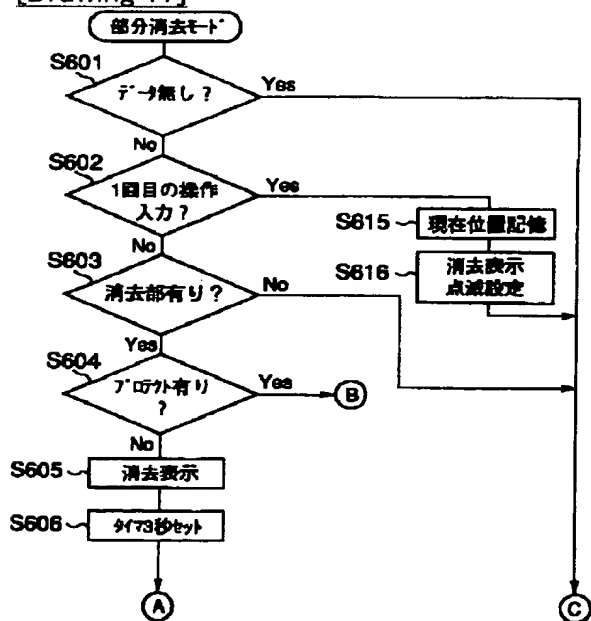
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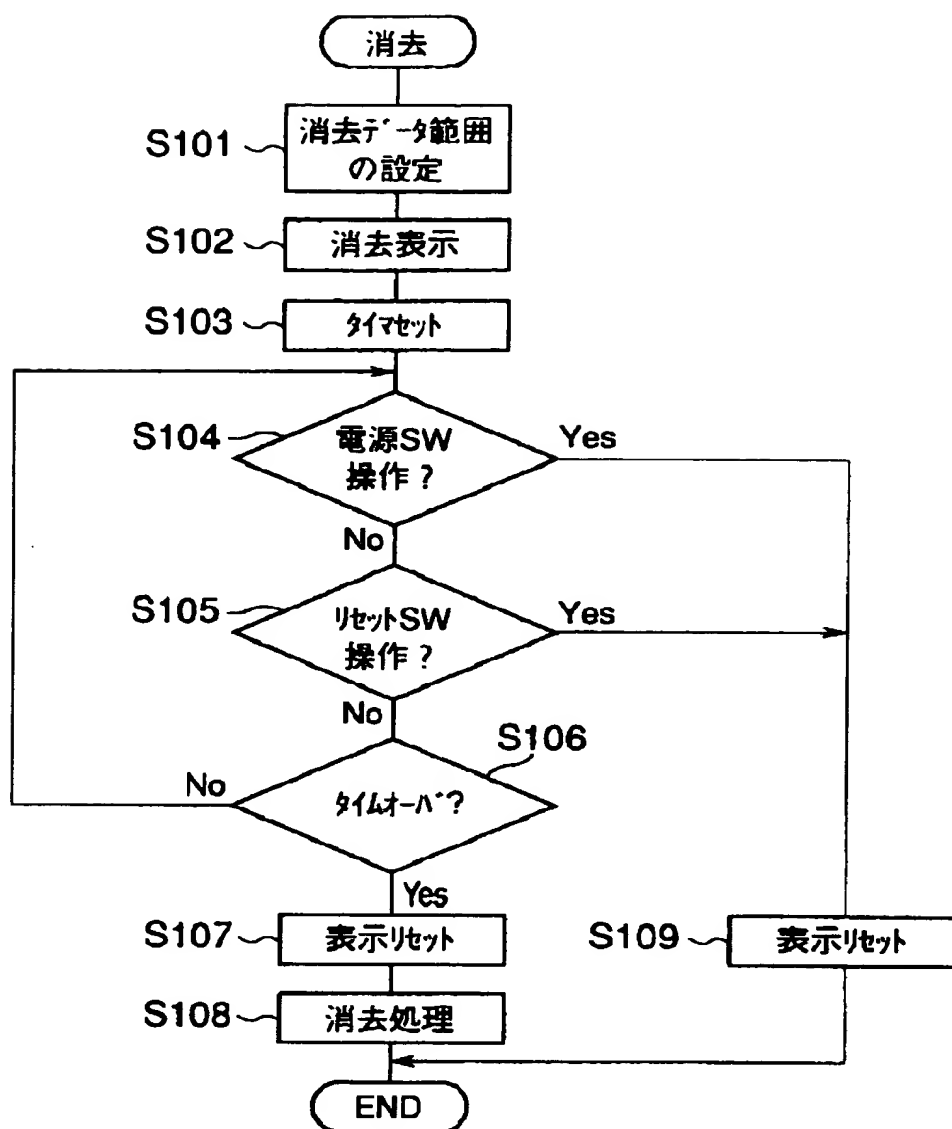
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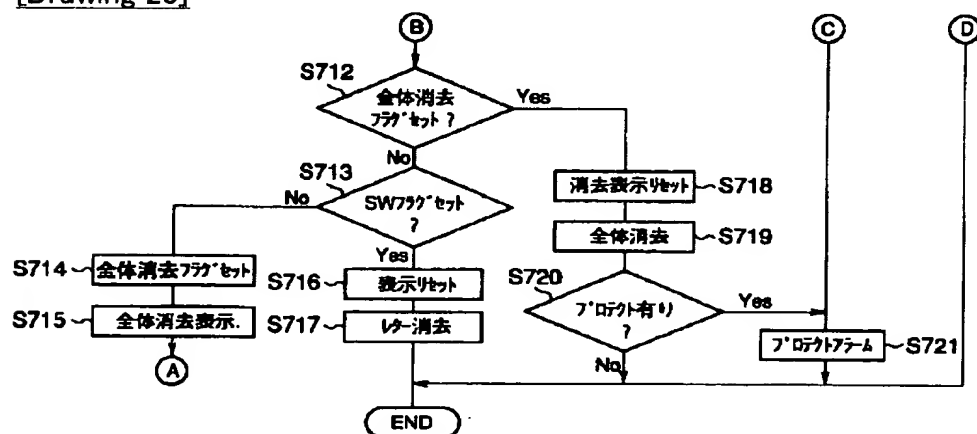
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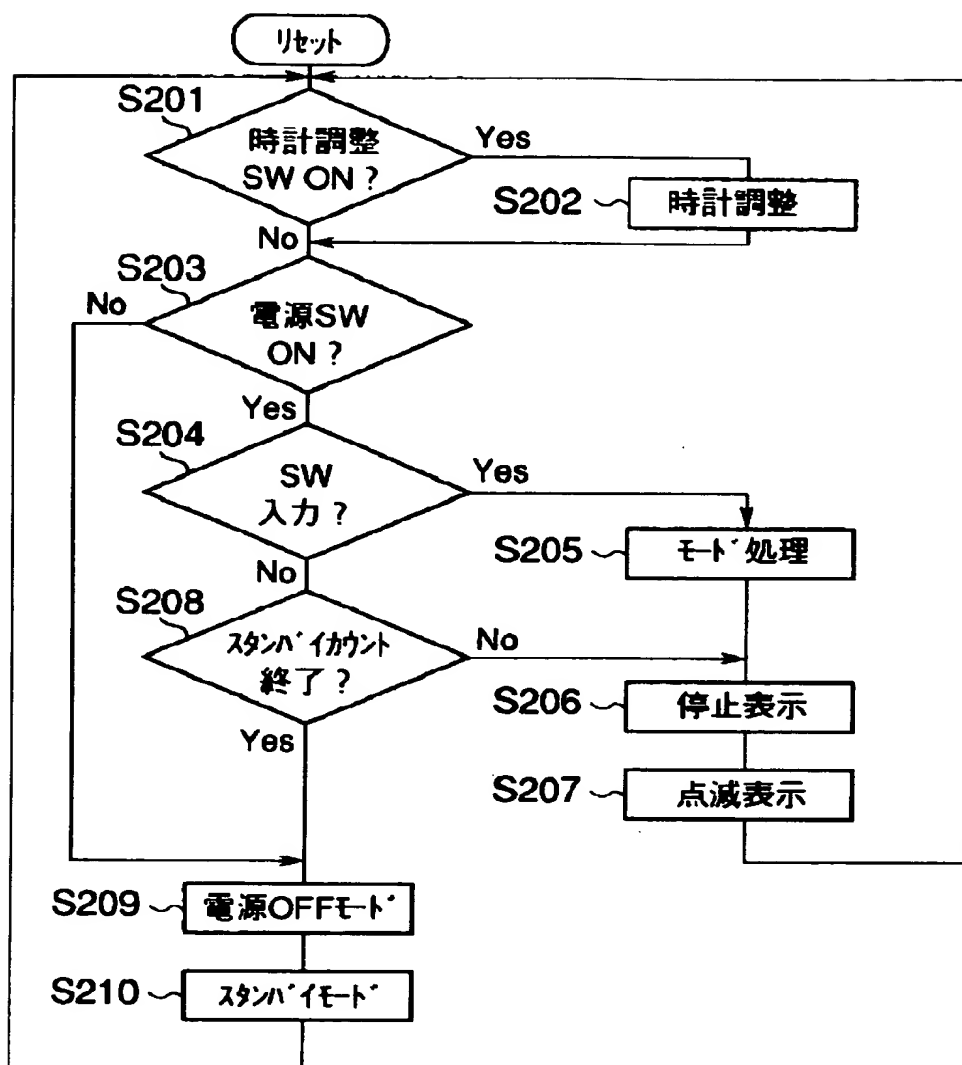
[Drawing 7]



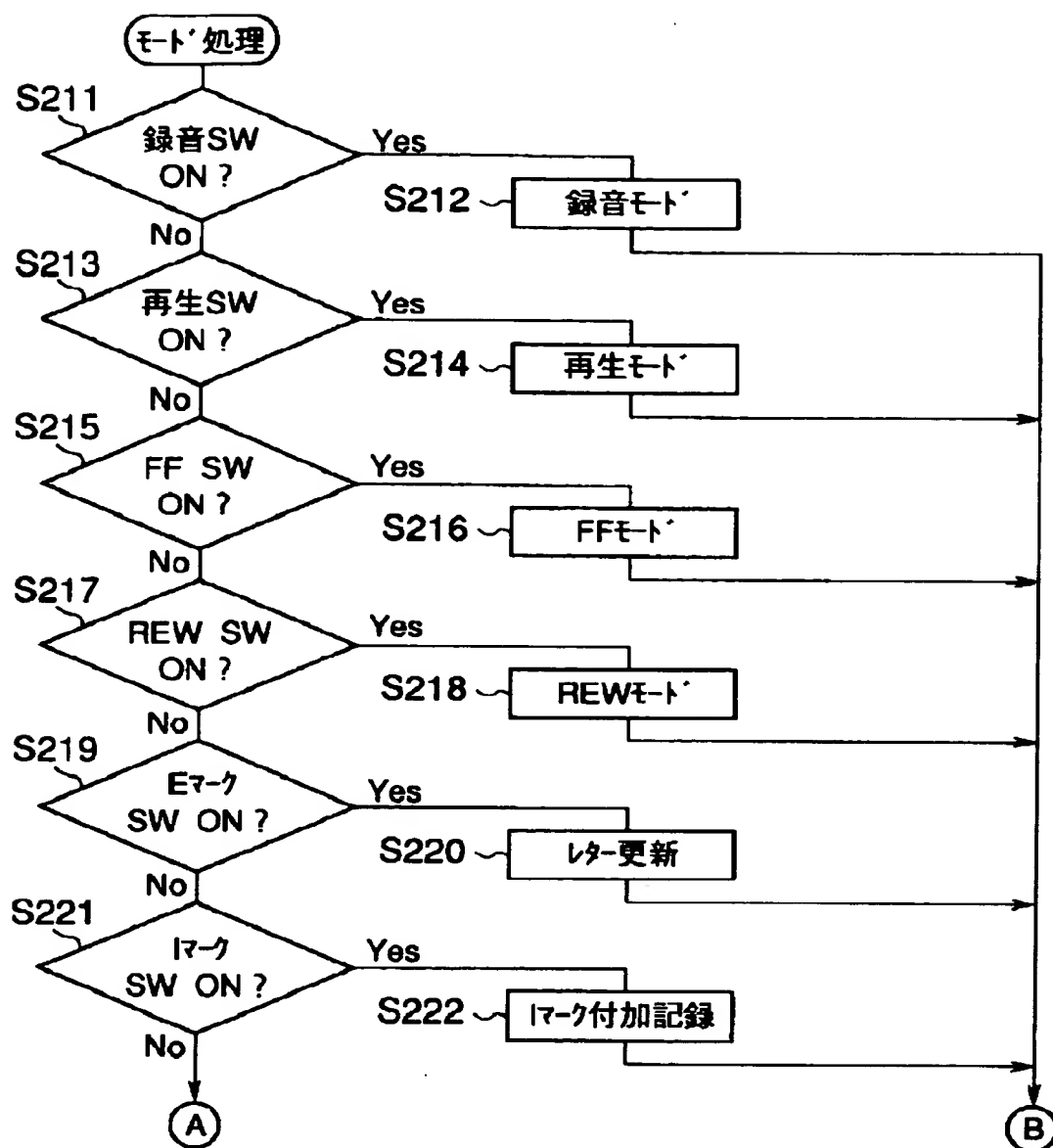
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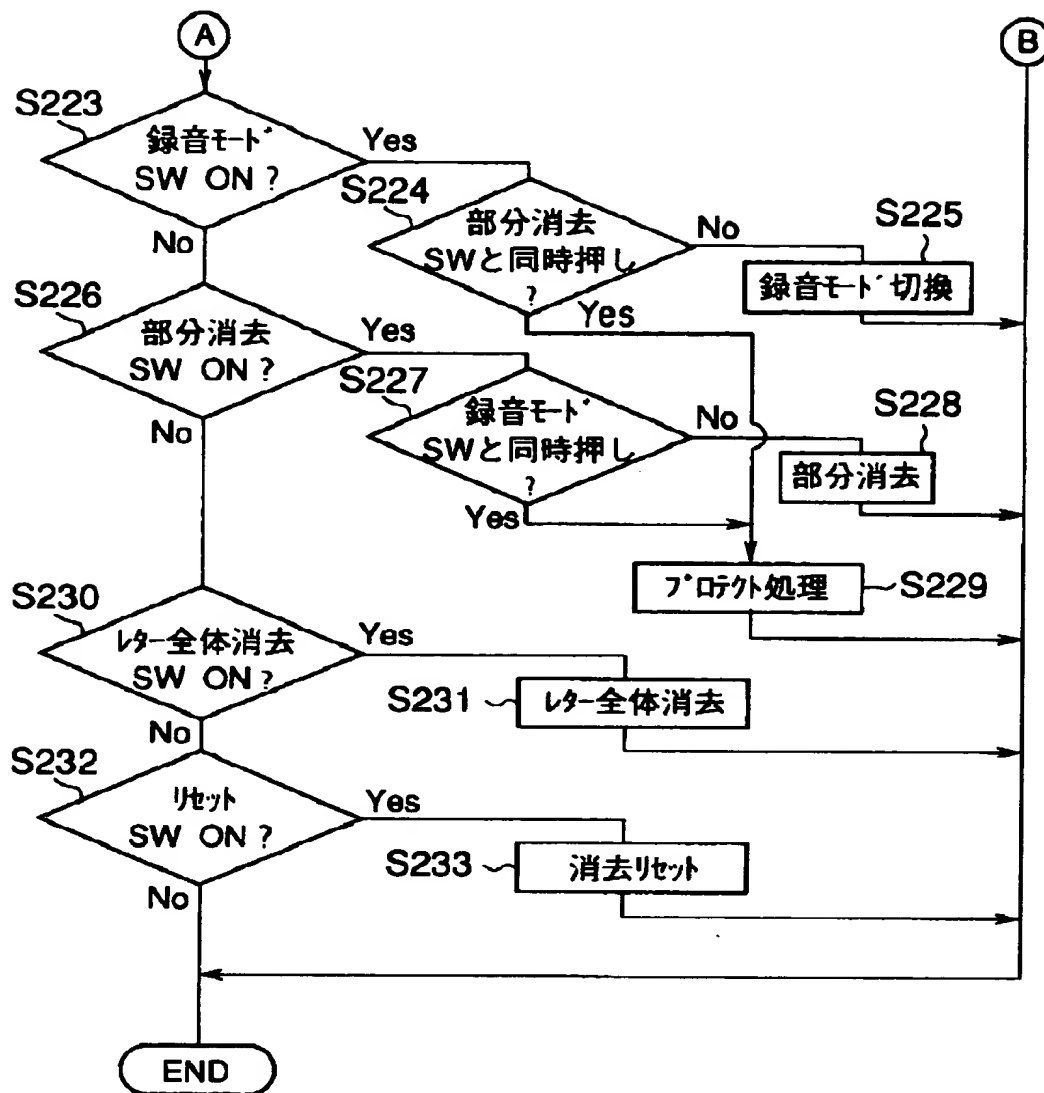
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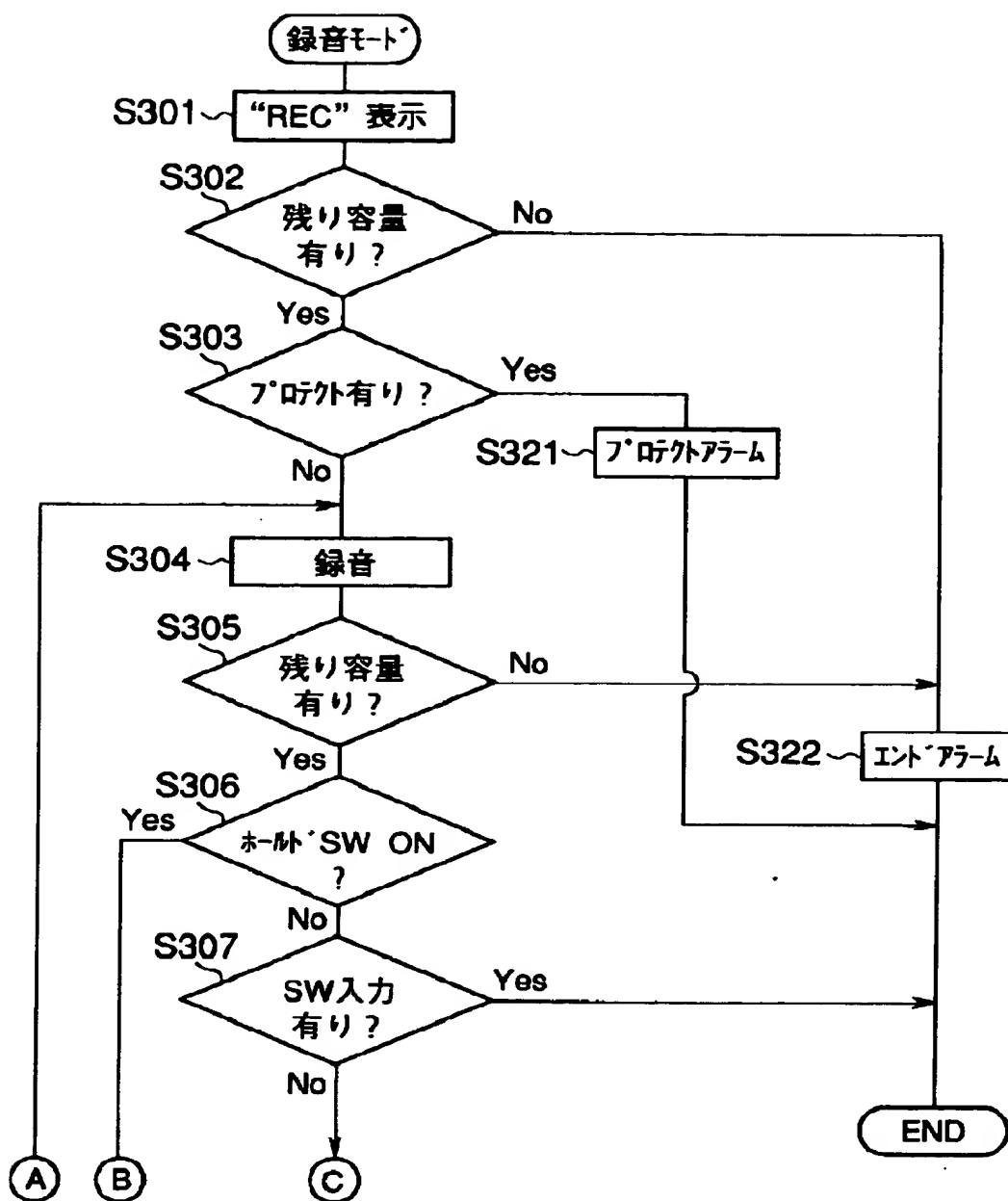
[Drawing 9]



[Drawing 10]

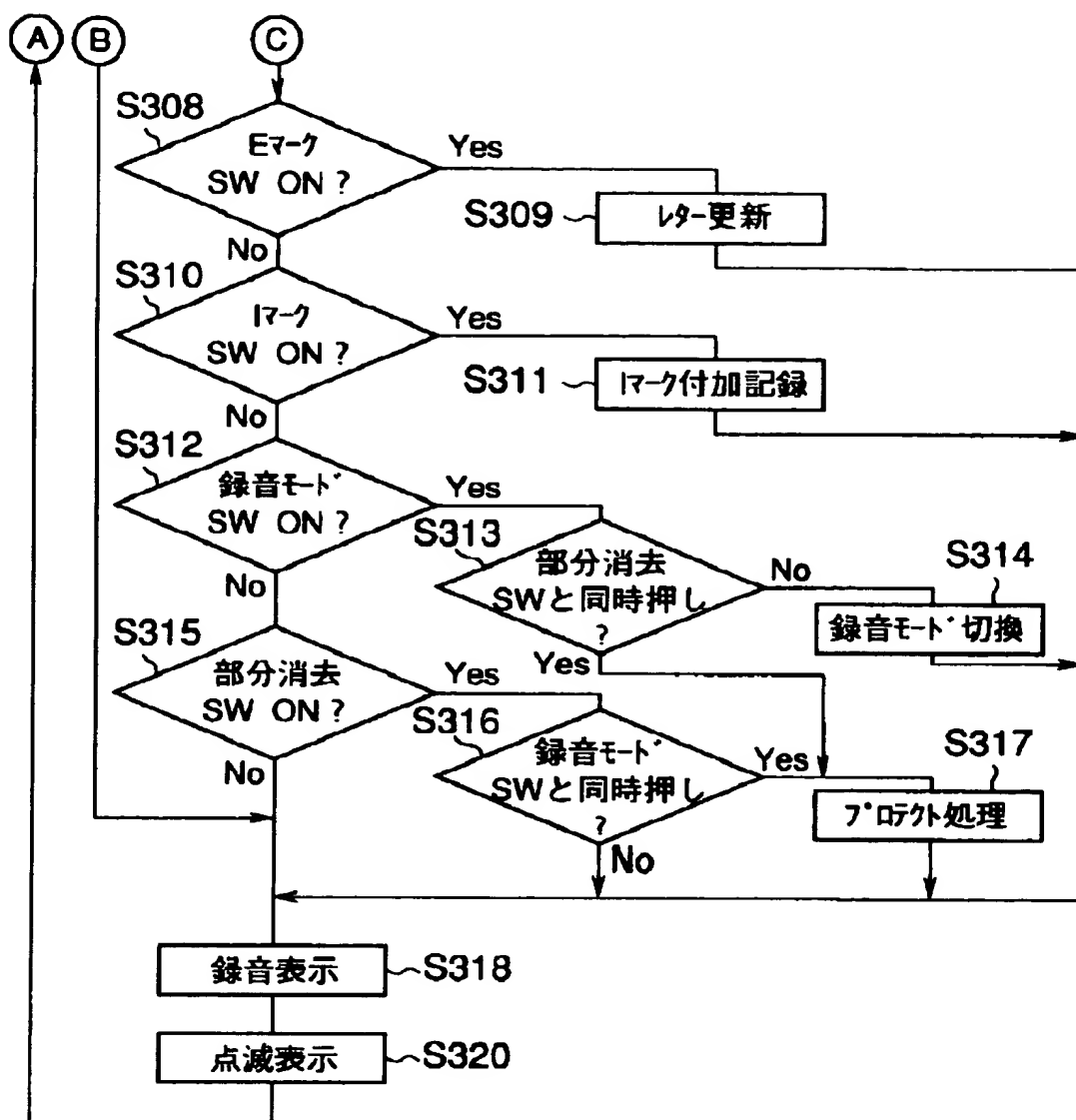


[Drawing 11]

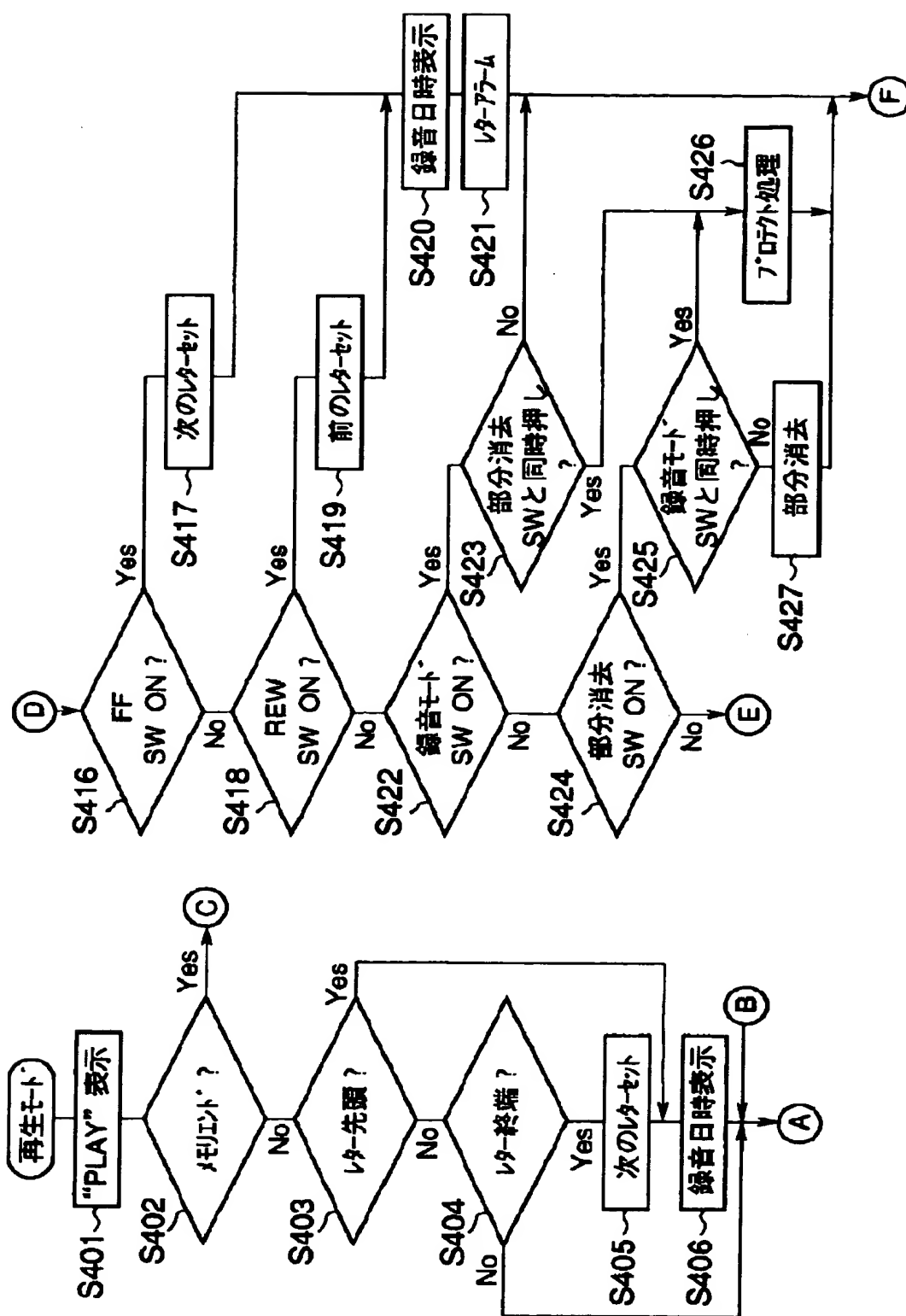


[Drawing 12]

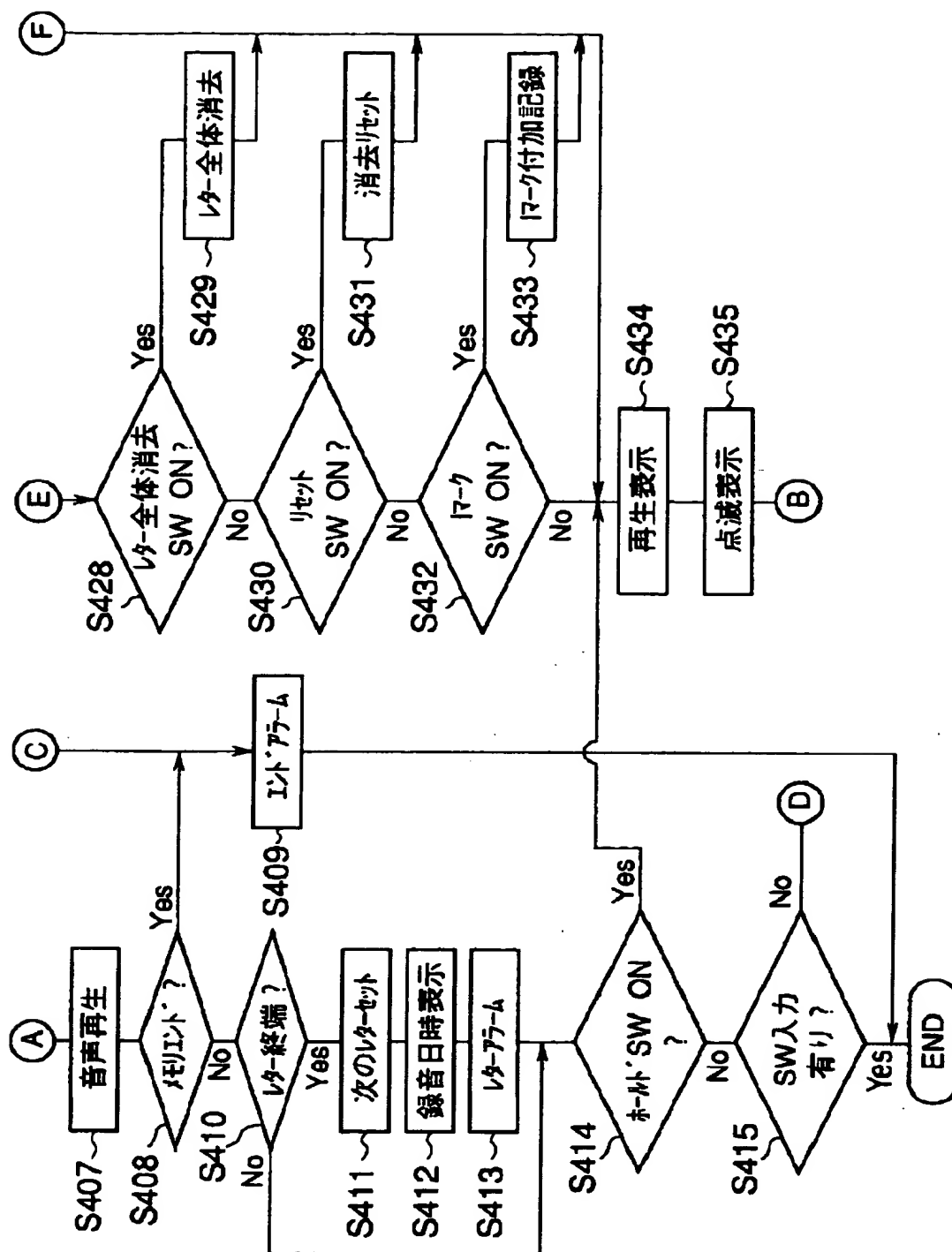




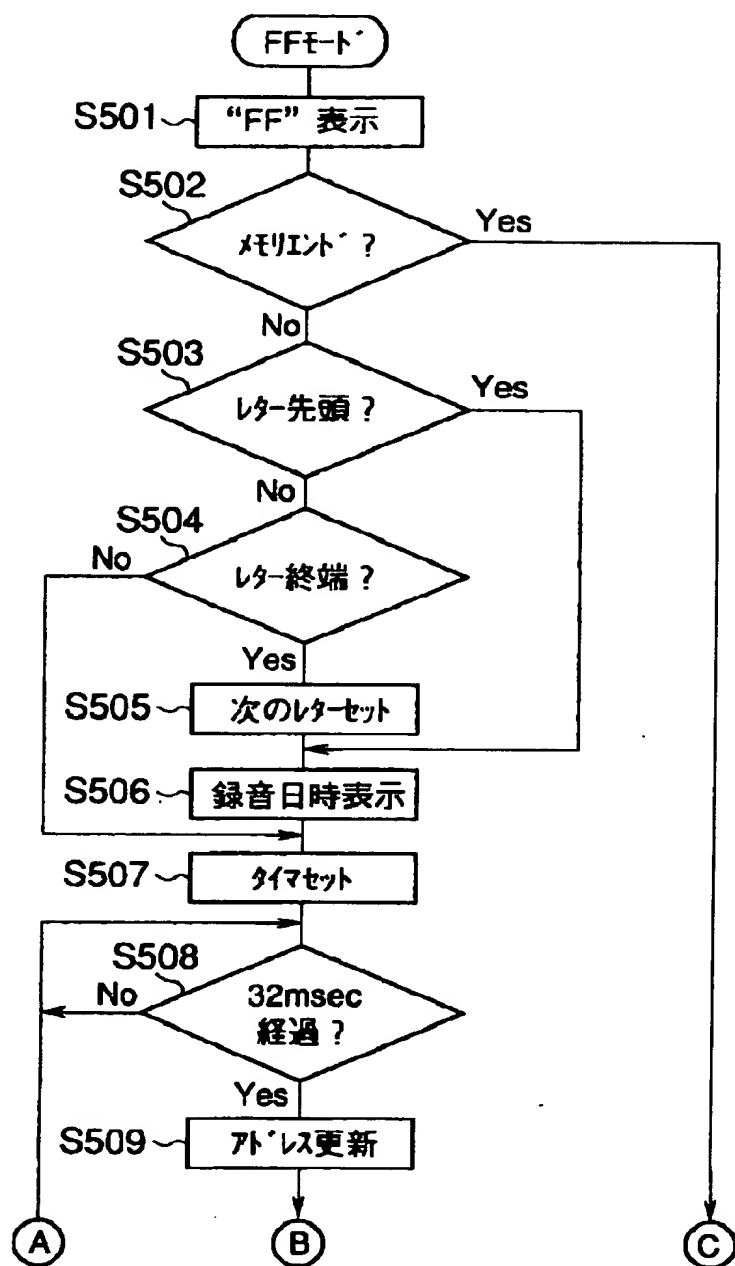
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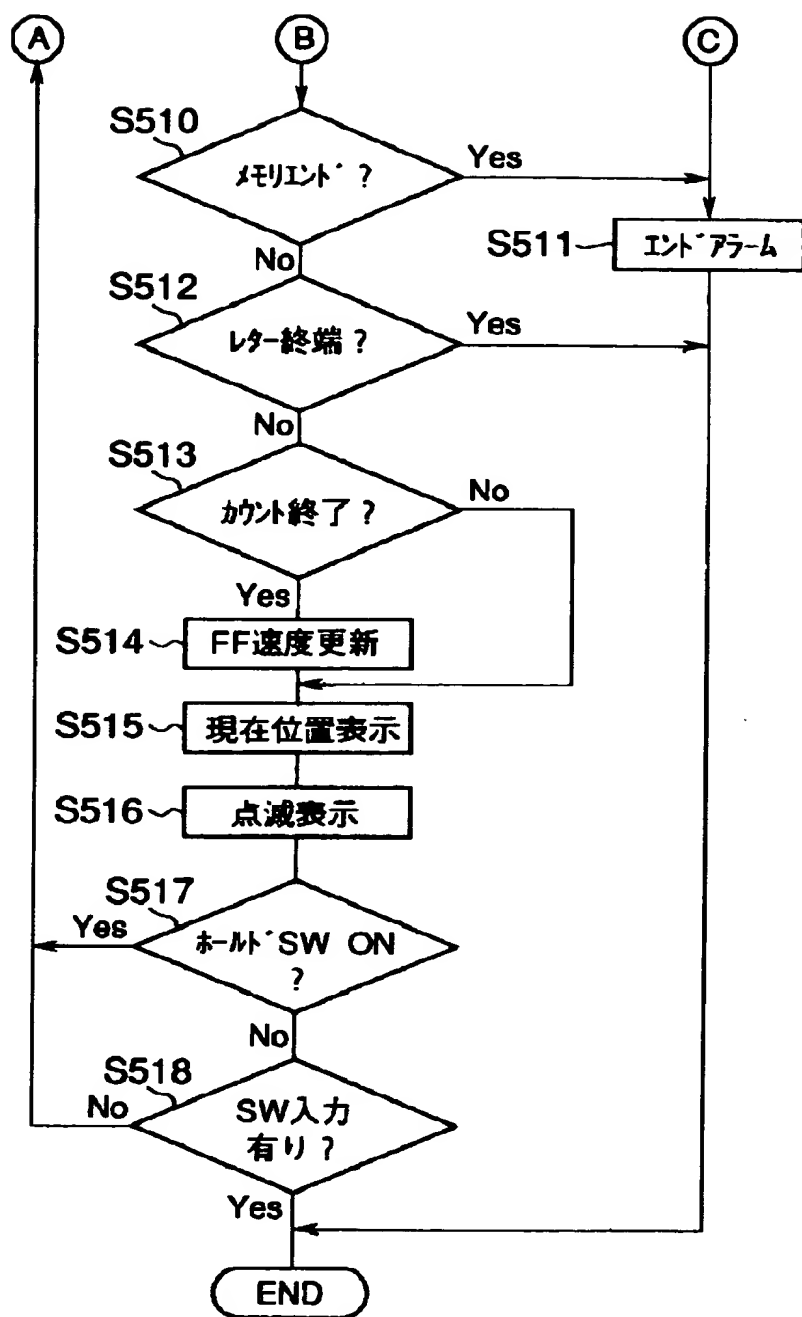
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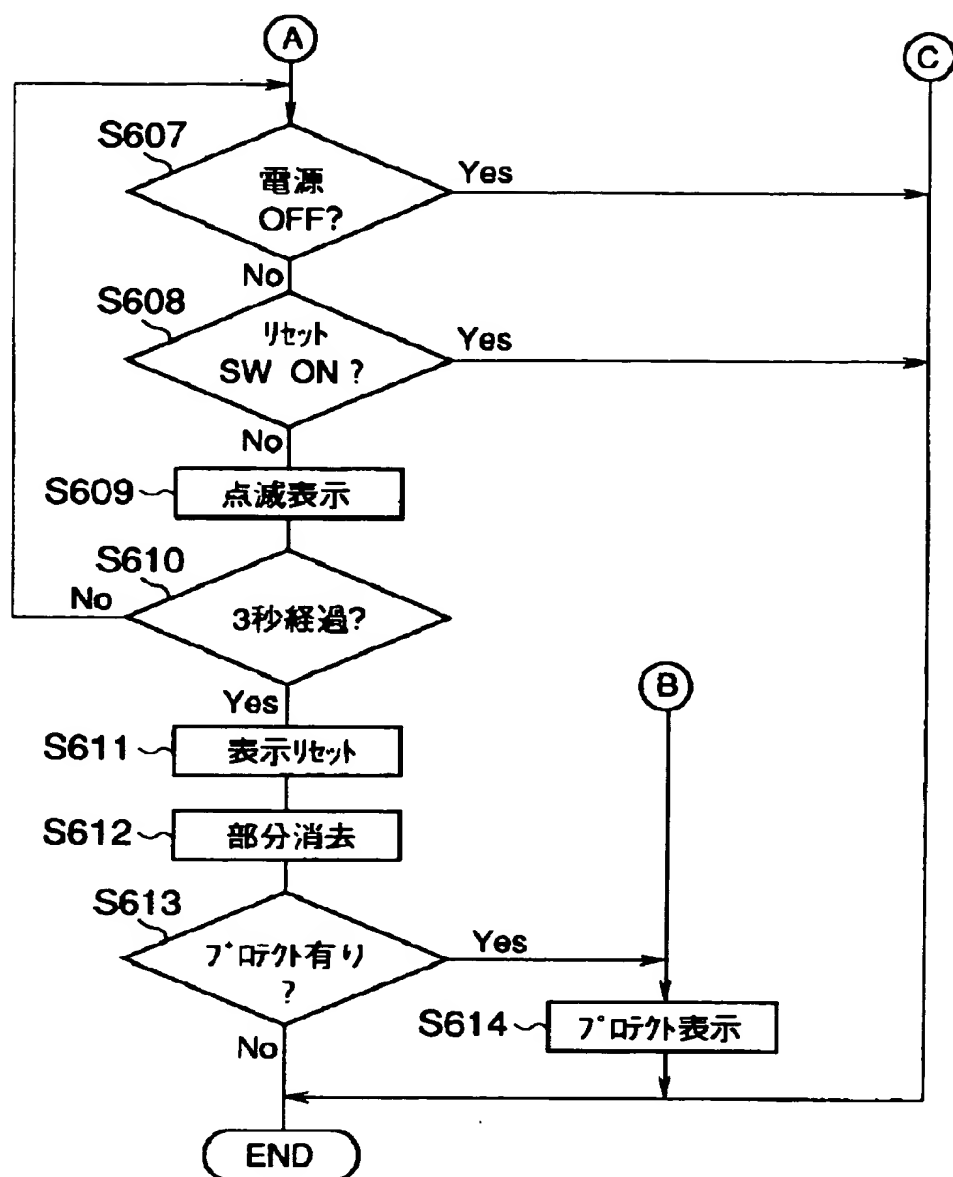
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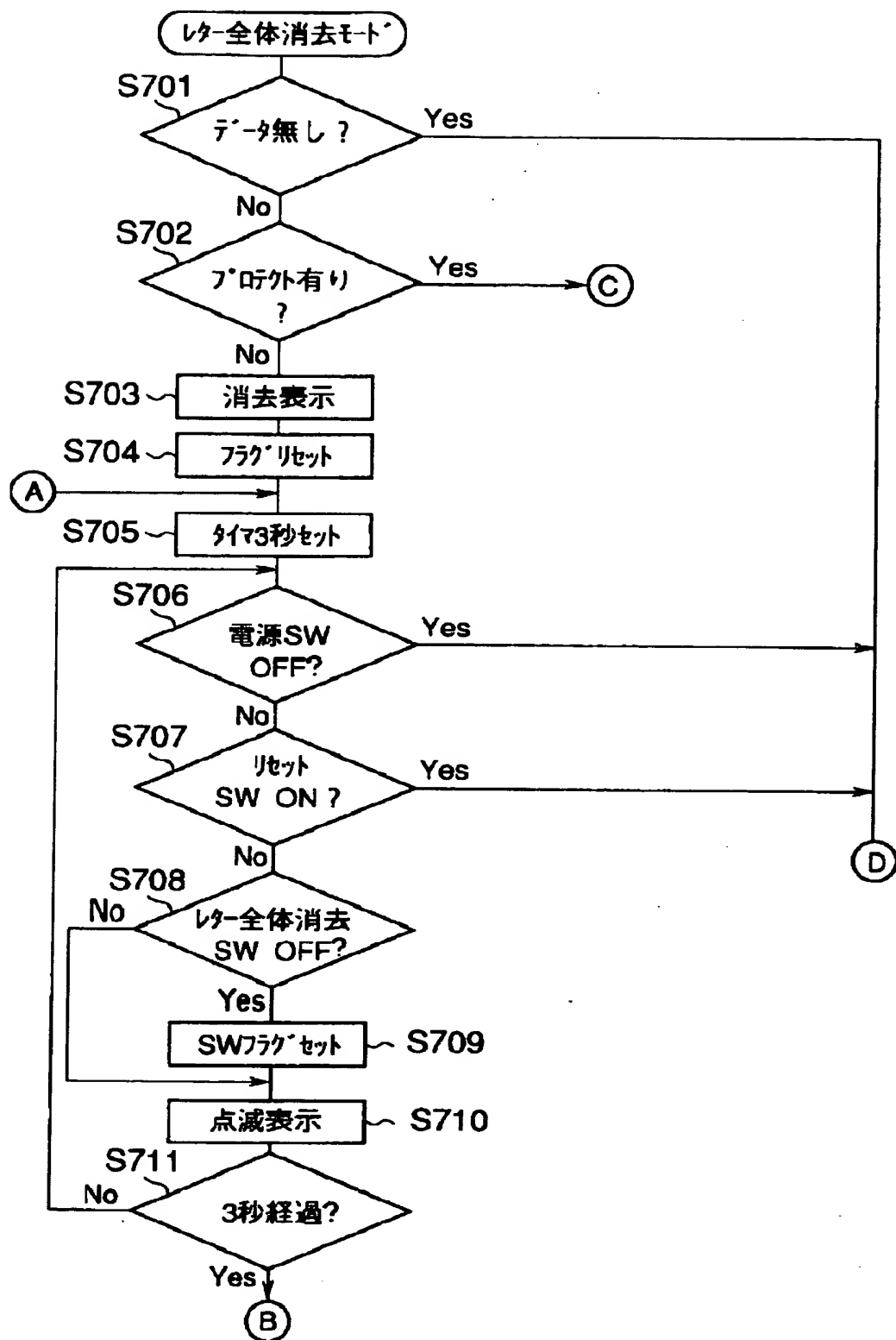
[Drawing 16]



[Drawing 18]



[Drawing 19]



[Translation done.]